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SOCIETY.



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# JOURNAL

OF THE

## American Geographical and Statistical SOCIETY.

Vol. I.

JANUARY, 1859.

No. 1.

### PROCEEDINGS.

FIRST MEETING (for the season), December 2d, 1858. The President in the chair.

The annual report of the Council, and also that of the Recording Secretary, were read and accepted.

The Librarian made the following report:

SOCIETY'S ROOMS,  
New York, December 2, 1858. }

To the American Geographical and Statistical Society—

The Librarian would respectfully report:

That subsequent to his last report, submitted on the 4th November, 1858, five donations have been received, amounting to 30 volumes in octavo, and 4 pamphlets, in octavo, for which the thanks of the Society will be conveyed to the respective donors through the Librarian and Foreign Corresponding Secretary.

The Librarian would also respectfully call the attention of the Society to the gratifying fact, that during the past year, three hundred and ninety-nine donations have been made to the Library of the Society, comprising in the aggregate:

34 Maps,	217 Quarto Volumes,
143 Charts,	656 Octavo “
13 Folio Volumes,	81 Quarto Pamphlets,
	331 Octavo Pamphlets.

As it would be impossible at this time to enumerate all the donors who have been so liberal toward the establishment of a Geo-

graphical and Statistical Library, I beg leave to state, that the next number of the Society's Bulletin will contain, not only a complete catalogue of all the existing publications and maps, but also a list of all the donors.

Respectfully submitted.

MARSHALL LEFFERTS,  
*Librarian.*

The Treasurer presented his annual report of the receipts and expenditures for the past year, which was accepted, and referred to a committee for auditing.

The Society then proceeded to the election of officers for the ensuing year, and the following gentlemen were chosen, viz.:

#### PRESIDENT:

FRANCIS L. HAWKS, D. D., LL. D.

#### Vice-Presidents:

HENRY GRINNELL, Esq.,  
ARCHIBALD RUSSELL, Esq.,  
JOS. P. THOMPSON, D. D.

*Foreign Corresponding Secretary*—JOHN JAY.

*Domestic Corresponding Secretary*—MARSHALL

LEFFERTS.

*Recording Secretary*—JAMES W. BEEKMAN.

*Treasurer*—F. A. CONKLING.

*Librarian*—EGBERT L. VIELE.

*Council*—Henry E. Pierrepont, Henry V. Poor, Hiram Barney, George Folsom, Charles P. Daly, Frederick Prime, Daniel P. Noyes, Joseph B. Varnum, Jr., Robert B. Minturn, Jr.

The Hon. Isaac I. Stevens, M. C. from Washington Territory, read a paper before the Society on the "*Northwestern Territories.*" A vote of thanks was tendered to Mr. Stevens, and a copy of the paper requested for the Archives of the Society.

*Adjourned.*

SECOND MEETING, Dec. 16, 1858. The President in the chair.

I. I. Hayes, M. D., of Philadelphia, (late Surgeon to the Second Grinnell Arctic Expedition,) read a paper on the "*Polar Discoveries of Dr. Kane, and a plan for further research.*" On motion of Mr. Viele, seconded by Mr. Henry Grinnell, it was unanimously

*Resolved*, That the American Geographical and Statistical Society cordially approve of, and endorse the plan of Dr. Hayes for a continuation of the explorations and surveys of the Polar Seas, deeming it due alike to the cause of science and to our national character, that the discoveries of the Grinnell Expedition reported by Dr. Kane should not be disputed or ignored, without an effort being made to confirm the results achieved by our gallant countrymen.

*Resolved*, That a committee of five members of the Society be appointed to co-operate with Dr. Hayes in the organization of the expedition proposed by him; which committee shall report, from time to time, the progress of the organization, and shall give due notice of the time fixed for the departure of the expedition.

A vote of thanks was tendered to D. Hayes, and a copy of his paper requested for the Archives of the Society.

*Adjourned.*

THIRD MEETING, Jan. 6, 1859. The President in the chair.

The following letter was read from Mr. Conkling, resigning his office as Treasurer of the Society:

ROOMS OF THE AM. GEO. AND STAT. SOC.,  
Thursday, December 23, 1858.

To Francis L. Hawks, D. D., LL. D., President of the Am. Geo. and Stat. Soc.—

SIR,—The discharge of a public duty will re-

quire my absence from this city for some months to come, and I accordingly resign the office of Treasurer of the Society. In doing so I venture to entertain the hope, that at some future day I may be permitted to contribute my humble efforts in support of a Society, the success and prosperity of which I have for years had greatly at heart.

I have the honor to remain,

Faithfully yours,

F. A. CONKLING.

Mr. Conkling's resignation was accepted, and Frank Moore, Esq., elected to fill the vacancy thereby created.

John Rae, M. D., of Montreal, and I. I. Hayes, M. D., of Philadelphia, were elected corresponding members of the Society.

Wm. Aymar, Jacob Harsen, James C. Malory, George W. Hatch, Esqs., and Rev. Wm. Rudder, Rev. Dr. W. E. Eigenbrodt, and William Loyd, were elected resident members.

In accordance with the resolutions adopted at the last meeting of the Society, the President appointed Mr. Viele, Mr. Grinnell, Mr. Belmont, Mr. Lefferts, and Mr. Pierrepont, a special committee, to co-operate with Dr. Hayes in his plan for further research into the Arctic Regions.

The Rev. Dr. Adamson gave notice that he should introduce at the next regular meeting of the Society the following resolutions:

1. That the Corresponding Secretaries of such American Missionary Associations, as have Missionaries resident in foreign countries, or among the Indian tribes of the United States, be *ex-officio* members of the Society.

2. That a special committee be appointed, to organize and conduct a systematic correspondence with Missionaries resident in foreign countries, or among the Indian tribes of the United States.

Dr. Abraham Gesner, of Brooklyn, read a paper on the "*Fisheries of North America.*" A vote of thanks was tendered, and a copy of the paper requested for the Archives of the Society.

*Adjourned.*



## DEPARTMENT OF GEOGRAPHY.

## NORTHWEST AMERICA.\*

THE Northwest portion of the American Continent has been of late, and is now attracting much attention. The history of this region, though meagre, is interesting. The coast was explored in the latter part of the 18th century by English, American, and Spanish navigators. A Boston shipmaster gave name to the Columbia River and Gray's Harbor; a Spanish navigator is memorized in the Straits of De Fuca, and a Briton in Vancouver's Island.

About the same time, or shortly after these events, the Northwest Company and the Hudson's Bay Company pushed their explorations to the frozen ocean, and to the Pacific, in about lat. 52° N., and established trading posts all over this extensive territory. Two centuries had already been completed since the Jesuit Missionaries from New France had penetrated to the upper lakes and the Mississippi.

The explorations of Lewis and Clark, in the early part of the present century, made known to the world the two great rivers across the continent—the Missouri and the Columbia, and the general character of their basins. They were soon followed by the American trappers, who planted establishments both on this side and west of the Rocky Mountains.

The efforts of John Jacob Astor to found a great trading establishment on the Columbia, and to make tributary to it the whole western slope, by a system of posts, through misfortunes of various kinds failed; and the whole of that country, as well as the country northward to Hudson's Bay, and stretching from the Pacific to the Great Lakes, came under the control of a foreign company. Thus, so far as concerned the agencies at work to develop the country, the American people had control simply of the

portion east of the Rocky Mountains; all west of that range was maintained under another jurisdiction, solely as a hunting ground.

The treaty of 1846 established the line (lat. 49° N.) between the possessions of the United States and British America. In the same year, the wagon of the American pioneer scaled the mountains which had hitherto presented a formidable barrier against westward progress, and before its close, American citizens had carved out their homes on the shores of the western ocean.

Time rolled on—California and its vast mineral resources became known. Oregon, which had been healthfully and rapidly settling, became stationary, and many of the settlers went to California to dig for gold; and to the same attractive region the whole overland emigration was diverted. This condition of matters, however, was not of long duration. Gold was also discovered in southern Oregon, and large numbers of miners found remunerative employment; the tide of population again rose, and ultimately, in 1853, the northern portion of the territory was erected into a separate government, under the title of WASHINGTON.

Within the last four or five years rumors had spread abroad that gold existed over a large area in Washington Territory, and in the British Possessions to the north. The fact has now been verified, and the extent and richness of the diggings been established beyond doubt.

The present, therefore, appears to be an opportune moment, for presenting a careful consideration of the geography and resources of the regions involved in this enquiry and to indicate what may be the measure of their future development and destiny.

Looking on the map of North America, attention is arrested by the great mountain chain which traverses the continent north and south, between the Mississippi and the Pacific Ocean, and from which flow waters to either ocean. Great rivers having long distant courses reach the Gulf of Mexico, Hudson's Bay, the Frozen Ocean, and the Pacific Ocean. The upper tributaries of two of these—the Missouri and

\* "Address on the "Northwest" before the American Geographical and Statistical Society, delivered at New York, December 2d, 1858, by Hon. ISAAC I. STEVENS, Member of Congress from Washington Territory." (Abridged.)

the Columbia—interlock in the very heart of the Rocky Mountains. The head of steam-navigation on the first is found at Fort Benton, 2,415 miles above St. Louis, to which point the Missouri is navigated by steamers carrying 150 tons of freight; and the navigable head of the great southern constituent of the Columbia is found at the confluence of the Palouse. The distance intervening between these navigable waters is only 450 miles—a distance when compared with the breadth of the continent, inconsiderable and easy to be overcome.

There are other streams second only in importance to the Missouri. The two branches of the Saskatchewan, that have their sources also in the Rocky Mountains, north of the Missouri, stretch a great distance eastward to Lake Winnipeg, and find their way northward into Hudson's Bay. They connect also with the main Columbia itself, affording transit for passengers and freight several months of the year; and thus the Columbia River and the two branches of the Saskatchewan have from the first been the great lines of travel of the Hudson's Bay Company's servants.

The Mississippi has also its source in this region, furnishing with its tributaries a long course of waters navigable by steamers, and affording a very close connection both with Lake Superior and the Red River of the North; and the Red River flowing northward, and in a direction opposite to that of the Mississippi, is also navigable within our own borders several hundred miles for steamers, and makes connection between our own system of rivers and those which flow into Lake Winnipeg and Hudson's Bay.

But the great feature of the Northern portion of the American continent is the water-line of the Great Lakes, which stretches more than half way across from the Atlantic to the Pacific. This fact is of deep significance, when we consider that vessels, without breaking bulk can pass thence to the Ocean, either by the Canadian canals and the St. Lawrence, or by the New York canals and the Hudson.

Thus we find that the country under exami-

nation is one of great natural water-lines across the continent—the Great Lakes, the Mississippi, the Red River, the Missouri, the Saskatchewan and the Columbia. Southward of this region the deficiency of navigable streams is remarkable. After leaving the Missouri, no navigation is again found until the Sierra Nevada has been crossed, and the lower valley of the Sacramento attained.

The mountain chains which characterize this country are the Sierra Nevada of California, and the Cascade Mountains of Oregon and Washington, stretching far to the northward. The Rocky Mountain chain has a vast extension in the parallel of San Francisco and Washington City and to the northward of the South Pass, and then diminishes in breadth still further north until it passes beyond the 49th parallel. Again there are, intermediate between these great ranges, many subsidiary chains which need not here be more specifically referred to.

Another peculiarity of the country of the Missouri and the Columbia is, that on the eastern slope the prairie region extends to the very base of the Rocky Mountains. From Fort Union, along the valley of Milk River to Fort Benton, there are no upheavals with the single exception of the Three Buttes, 3,000 feet high, which rise out of the prairie just under the 40th parallel, and about 100 miles eastward of the great chain.

The Rocky Mountain region, between lat. 46° and 49° N., is also essentially a country of prairies. West of the Bitter Root chain, a great plain stretches to the Cascade Mountains, and from the 48th to below the 46th parallel, this prairie region is for the most part well-watered, well-grassed, and furnishes a large portion of arable land.

There still remain to be considered the two great ports on the Pacific coast, San Francisco and Puget's Sound. San Francisco is the great port of California, and must ever be a leading key-point of commerce. But Puget's Sound is admitted by all naval and military men who have ever visited its waters, to be the most



remarkable road-stead on the shores of any ocean. It has 1,600 miles of shore-line, and a great number of land-locked, commodious, and defensible harbors. It can be entered by any wind, is scarcely ever obstructed by fog, and is the nearest point to the great ports of Asia of any harbor on our western coast.

Within the last twenty years this country has been considered as an inhospitable, cold and barren region, fit only for Indians, wild beasts, and hunters. Observation, however, has not verified this climatic character; but on the contrary, it has declared that the climate of Puget's Sound is milder than that of New York. Ice is never formed on its surface; nor snow found on its shores for more than a few days at a time; and the merchants of San Francisco have to go north to the Russian settlements to obtain their supplies office.

The material resources of Puget's Sound and the country watered by the Columbia and Willamette, are literally inexhaustible. The whole country west of the Cascades has for the most part a fertile soil, a temperature so mild through the winter that cattle do not require fodder, and seed can be sown from September to March; and then the summers are glorious. The forests on Puget's Sound are a great source of wealth. Spars are not only sent to Asia, the Sandwich Islands, and Australia, but to the navies of England and France, while immense quantities of sawed lumber are sent to both domestic and foreign ports; and yet the lumber and spar business is in its infancy. Within one mile of the shores of the Sound there is more timber than can be found on all the tributaries of all the waters of Maine.

On the coast, from Columbia to Vancouver's Island, there are extensive fisheries of cod and halibut; and this portion of the coast also abounds in whales. On the east shore of the Sound, and on the Straits of De Fuca, there is coal of excellent quality, and well adapted for steamers. The country also abounds in water-power near the navigable waters.

From the Cascade Mountains to the Rocky Mountains, there is a vast pastoral and agricul-

tural region. The Yakima country is a good grazing country. In the portion immediately north of the Columbia, there is a single tract of 2,000 square miles of arable land. The Walla-Walla valley is a delightful region, its streams lined with cottonwood, the neighboring mountain spurs covered with pine; and nearly the whole country between these mountains and Snake River is arable, and one-half adapted for small farms. This valley, or rather re-entering of Snake River, is the great key of the interior, and can subsist a farming population of 100,000 souls.

The country west of the Bitter Root, and north of Snake River, and thence extending westward nearly to the Palouse, has a fertile soil adapted to wheat and cereals generally. As regards the portion west of the meridian of the Palouse, it is somewhat affected by drought, and is more of a grazing than an agricultural country. Nevertheless, on the line of the Columbia, on the shores of many of the streams and lakes, and in many of the intervening swales and valleys, tracts are found where there is abundance of arable land.

The country north of the Spokane to lat. 49° N. is wooded, and a very considerable portion is arable. The Bitter Root Mountains are covered with heavy timber—pine and fir, and larch and cedar. The Flathead country east of the Bitter Root, and along the eastern slope of the Rocky Mountains, has an area of arable land estimated at 12,000 square miles; and the country stretching from the Rocky Mountains to the rivers running to the Gulf of Mexico and Hudson's Bay, watered by the Upper Missouri, the Saskatchewan, and Red River of the North is adapted for the most part to settlement and civilization.

The time will come, indeed, when there will be agricultural settlements throughout the whole extent of this country, from the Mississippi to the Pacific, simply excepting limited extents along the higher parts of the mountain chains, and in some of the prairie regions. As illustrative of the capacity of the country it may be stated that the Indians east of the Cas-

cares are rich in horses and cattle, and that their general wealth is not exceeded by that of any civilized community on this continent. The Spokane and Flathead nations range the winter long without dried fodder; and there is no finer beef than that of the Walla-Walla country. At Fort Benton and Fort Union horses and cattle are maintained through the winter on the green herbage of the country.

Towards the advancement of this region much has already been effected. The country has been scientifically explored; a commencement has been made in surveying the public lands; some progress has been made in negotiating treaties with the Indian tribes, and the Indians themselves have recently been shown a memorable instance of the power and determination of the government of the United States to protect the lives of its citizens.

The discovery of gold in British Columbia has developed, on the part of the British people, an earnest determination to establish communication across the continent.

The United States government has already taken the initiative towards the same purpose; and here the two great powers enter upon the race for supremacy. The question is thus resolved into the practicability of establishing lines of travel from the water-line of the Great Lakes to Puget's Sound, that port which is the nearest of all American ports to Asia. It is not whether such an undertaking will inure to the benefit of specific localities; but whether this is not a project upon which rests the question as to whether the great carrying trade from Asia to Europe shall pass over American or British soil; or whether upon the success of this undertaking does not rest the question, whether the key of the North Pacific shall be in the hands of the American people, or in the hands of the subjects of a foreign power. If it be practicable to build a Railroad and establish this route, it is the duty of the American government to aid in the undertaking. It ceases, indeed, to be sectional and geographical, and rises into a noble and elevated nationality to which all hearts should yield a willing assent.

It is alleged that the severity of the climate and the excessive depth of the snows are insuperable objections against the construction of a continental railroad, along what is termed the northern route, and this even by men of intelligence, and in official reports. If these allegations were true, then the route as proposed would be fundamentally impossible; but let facts speak for themselves. In an examination of the country by the parties under Gov. Stevens in 1853, '54 and '55, the passes of the Rocky Mountains, Hell Gate, Northern Little Blackfoot, and Cadot's Pass, were crossed in December, January, February, and March, 1853-4, and in no one of these passes did they find more than 15 inches of snow. That same winter the party that crossed the Rocky Mountains in January, went down Clark's Fork in February, and the sole trouble met with was where the snow was deep enough to cover up the grass (they went on horseback); but in these cases it was in the wooded portions, and 30 inches was the greatest depth. When they again reached the prairies they found it but one foot deep; and every man of science knows what influence forests have in preserving the depth of the snows, and how it disappears on the cleared lands. There is one point alone on all the route about which our information is deficient, and that is the crossing of the Cascade Mountains to Puget's Sound; but it is the opinion of Gov. Stevens, that even here no serious obstruction occurs. The snow was but six feet for a short distance in the latter part of January, 1856. At Fort Benton and Fort Campbell, ever since their establishment, some 25 years ago, the fur companies have taken their goods to their winter-trading posts on the Milk and Marias Rivers in wagons, there not being snow enough for sleds. Will then the snows of this route, which do not prevent the Indians and traders from traveling, furnish any difficulties which will render it unusually troublesome for the passage of railroad cars?

With regard to the question of coldness, it is alleged, that it is so intense on the route of the 47th parallel, that it will be impracticable for

a large portion of the year to work men in the construction of the road, or to run cars for many days in the winter. Unfortunately for these opinions, we have observations on these points. And we have already great lines of railroad in operation over tracts of country as cold, and even colder than the route from Fort Benton to the Pacific. The mean winter temperature at Fort Benton, in 1853-4, was  $25^{\circ} 38$ ; the average at Montreal on the Grand Trunk Railway for the same year was  $13^{\circ} 22$ , and at Quebec  $11^{\circ} 03$ . On the great Russian Railroad, the comparison is very similar; the mean winter temperature at Moscow is  $15^{\circ} 20$ , and at St. Petersburg  $8^{\circ} 10$ . At Fort Snelling, in 1853-4, it was  $11^{\circ} 64$ , and the mean of 35 winters was  $16^{\circ} 10$ . Thus, in the winter of 1853-4, an unusually cold winter, Fort Benton was  $12^{\circ}$  warmer than Montreal,  $14^{\circ}$  warmer than Quebec and Fort Snelling,  $10^{\circ}$  warmer than Moscow, and  $7^{\circ}$  warmer than St. Petersburg. In the Bitter Root Valley, the average temperature in the winter of 1853-4, was  $24^{\circ} 90$ , and in 1854-5 it was  $30^{\circ} 30$ , and the greatest cold at Cantonment Stevens was  $29^{\circ}$ . At Fort Snelling, in the same winter, it was  $36^{\circ}$ , at Montreal it was  $34^{\circ}$ , and at Quebec  $29^{\circ}$  below zero. Thus, on the proposed northern route the greatest cold is not equal to the greatest cold on the route of the Grand Trunk Railway; and the same fact is unquestionably true of the great artery of Russia. Taking the number of cold days, when the average temperature was below zero, we find 12 at Fort Benton, 10 at Ct. Stevens, 18 at Fort Snelling, 18 at Montreal, and 23 days at Quebec; and again taking the number of warm days, when the average temperature was above freezing point, we find at Fort Benton 43 out of 90 days, and at Ct. Stevens 32, against only 6 out of 90 at Fort Snelling, 5 at Quebec, 8 at Montreal, and 18 at Albany—all in the winter of 1853-4. But it may be objected that the temperature of Fort Benton and Ct. Stevens is not the measure of the temperature of the intermediate rocky range through which the route passes. Fortunately the party referred to in connection with

the depth of snow, made observations of temperature on the route, and it has been found by careful comparison that the passage was made during the extreme cold weather of that winter, and the temperatures observed therefore indicate the extreme cold of the pass, and not the usual cold. The mean temperature in the pass from 12th to 23d January, twelve days, was  $10^{\circ} 10$ . At Ct. Stevens the mean was  $5^{\circ} 20$ , and at Fort Benton  $7^{\circ} 30$ . The greatest mean cold of any day observed in the pass was  $22^{\circ}$ , against  $24^{\circ}$  at Fort Snelling, and a still lower figure at Pembina.

That the winter of 1853-54 was unusually cold in the mountain region is shown in the fact that in the Bitter Root Valley, the thermometer never went down to zero in the winter of 1854-5, whilst it fell as low as  $29^{\circ}$  in that of 1853-54. The average mean temperature of this valley in the winters of 1853-54 was  $24^{\circ} 90$ , whereas in 1854-55 it was  $30^{\circ} 30$ . The same general result, determined by observation, as regards the temperature of the pass, would be arrived at by using the formula that every 1,000 feet in altitude would depress the temperature  $3^{\circ}$ . Now when six miles of the pass is more than 5,000 feet above the sea, the greatest altitude being but 6,044 feet, and the average of the pass is but about 4,000. The pass, considering simply 165 miles of the distance, where the altitude exceeds 3,000 feet, will be only from  $1^{\circ}$  to  $10^{\circ}$  colder than Fort Benton, and except the six miles above mentioned, only from  $1^{\circ}$  to  $7^{\circ}$  colder. These facts, drawn from reliable records, ought to settle forever the question which has been raised prejudicial to this route—that it will be obstructed by snow and cold weather. So successful has been the great railroad from Moscow to St. Petersburg, that they are now pushing railroads in all directions, running them into regions truly Siberian; and the Canadian railroads are being extended westward utterly regardless of these objections, experience having shown their futility. It may, therefore, be assumed, that this northern route is entirely practicable as far as regards snow and cold; and that there can be

no greater obstacles to its construction and working than have been easily overcome in other portions of America, and in northern Europe.

We will now pass on to a more detailed view of the characteristics of the route and its relation to other routes. The distance from St. Paul and the western end of Lake Superior to the shores of Puget's Sound, is 1,800 miles. It is the shortest equated railroad line across the Continent, whether the eastern terminus be on the western border of the States, or on the Mississippi, or on Lake Superior, and it is much the shortest of all the surveyed routes, except those from San Diego and San Pedro, on the line of the 32d parallel. In connection either with the line of the great lakes and its system of canals and rivers, or the great railroad lines of the Canadas and the United States, it furnishes the most direct and cheapest route on the continent for freights and passengers from Asia to Europe and back again, and also between Asia and the Northwest, our West, our centre, our East, and the great seats of commerce on the Atlantic coast. The lineal distance on the route of the 32d parallel to the Mississippi, are 1,748 and 1,683, against 1,747 and 1,764, the lineal distances of Vancouver and Seattle from St. Paul, and against 1,733 and 1,750, the lineal distances from Superior City; and starting from the western border of the States, the lineal distances on the route of the 32d parallel are 1,598 and 1,533 miles, against 1,527 and 1,546 miles, the lineal distances from Breckenridge to Vancouver and Seattle.

The following table from official reports shows the distances on an air-line between the termini of the several explored practicable routes across the Continent, the lineal distances, the sums of ascent and descent, the equated distances in miles, the estimated cost, the extent of cultivable country, the extent of country which is less than 1,000 feet above the sea, and the extent varying from 1,000 to 9,000 feet, and the elevation of the highest pass on each of the routes which have been described in the preceding pages:

Routes.	Distance by Air Lino.		Distance by proposed route.		Sum of Ascents and Descents.		Length of level route of equal work'g exp'nses. Comparative cost of routes in millions of dollars.		Route through cultivable country.		Route through land generally uncultivable.		Miles at an elevation above the sea, between		Altitude above the sea, of the highest point on the route.		Tunnels at an elevation of	
	Miles.	Miles.	Feet.	Miles.	Doll'rs.	Miles.	Miles.	Doll'rs.	Miles.	Doll'rs.	Miles.	Doll'rs.	Miles.	Feet.	Miles.	Feet.	Miles.	Feet.
Near 47th & 49th parallels, —Breckenridge to Seattle.....	1,247	1,544	21,757	1,958	95	1,224	320	130	433	733	180	62	6	...	6,044	5,195		
—Breckenridge to Vancouver.....	1,213	1,527	17,587	1,961	94	1,207	320	243	391	648	178	61	6	...	6,044	5,195		
Near 41st and 42d parallels, —Cornell Bluffs via South Pass to Benicite.....	1,410	2,032	29,120	2,583	116	632	1,400	220	170	210	160	590	285	397	8,373	...		
Near 35th parallel, —St. Smith to S. Francisco	1,550	2,095	48,521	3,015	106	646	1,450	585	290	261	236	181	295	248	7,550	4,179		
—Fort Smith to San Pedro	1,360	1,920	48,562	2,745	92	420	1,400	364	292	236	210	185	295	248	7,550	4,179		
Near 32d parallel, —Fulton to San Francisco	1,630	2,024	38,200	2,747	90	634	1,190	693	347	120	342	271	50	...	5,717	...		
—Fulton to San Pedro.....	1,400	1,958	30,181	2,169	68	408	1,190	478	337	120	342	271	50	...	5,717	...		
—Fulton to San Diego.....	1,360	1,933	33,464	2,167	68	374	1,159	420	305	125	362	271	50	...	5,717	...		

In the above table Breckenridge, on the western border of Minnesota, is assumed as the starting point of the northern route—a point which is a terminus of a railroad now actually

under construction by aid of a Congressional grant of land; and Council Bluffs, Fort Smith, and Fulton as the starting points of the routes near the 41st, 35th, and 32d parallels, respectively.

The following tables makes the eastern termini of the northern route at Superior City and St. Paul, and of the other routes at Rock Island, Memphis and Gaines' Landing on the Mississippi River:

Routes.	Distances by proposed line.	Sum of Ascents and Descents.	Level route of equal working expense.
	Miles.	Feet.	Miles.
Near 47th & 49th parallels, —Superior City to Seattle..	1,750	21,787	2,164
— " " to Vancouver	1,733	17,587	2,067
—St. Paul to Seattle.....	1,764	21,787	2,178
— " " Vancouver....	1,747	17,587	2,081
Near 41st and 42d parallels, —Rock Island via Council Bluffs and South Pass, to Benicia.....	2,209	29,387	2,853
Near 35th parallel, —Memphis via Fort Smith, to San Francisco.....	2,366	48,791	3,285
—Memphis to San Pedro ..	2,090	49,132	3,015
Near 35th parallel, —Gaines via Fulton, to San Francisco.....	2,174	38,350	2,897
—Gaines " to San Pedro	1,748	30,331	2,319
— " " to San Diego	1,683	33,604	2,317

"If I am met," says Gov. Stevens, "with the objection that the Arkansas, Mississippi and Missouri are navigable, and that the routes on the 42d, 35th and 32d parallels should be stopped short at navigable waters, then, for purposes of comparison, I say very well, we will stop the northern road at Fort Benton, at the head of steamboat navigation of the Missouri, which will give a result vastly in its favor. I am of opinion, however, that the Mississippi valley and the great lakes is the proper eastern base. Thus we find—the western terminus of the routes of the 42d, 35th and 32d parallels, being San Francisco—that the lineal length of the northern route is 549 miles shorter than that of the 42d parallel, 616 miles shorter than that of the 35th parallel, 424 miles shorter than that of the 32d parallel; and that, as re-

gards the equated distances, the northern line is 689 miles shorter than the line of the 42d parallel, 1,121 miles shorter than the line of the 35th parallel, and 733 miles shorter than the line of the 32d parallel. But, looking to the eastern terminus, where are you when you reach the Mississippi on the route of the 42d 35th and 32d parallels?

"You are on a great navigable river, from which you can supply the Mississippi valley. But how will you reach New York, Chicago, Portland, Boston, Philadelphia and Baltimore?

"Will you tranship on the Mississippi, and take your winding course by the Gulf of Mexico, or take the rail, and seek some of the intermediate water lines which stretch along the whole distance?

"Will you make use of the Ohio, and the railroads and canals of New York, Pennsylvania and Virginia? On the northern route we are on navigable waters; we are now ready to enter our ships and go to Europe, or to New York; or, arrived at Montreal, we can pass by rail to Portland. If we compare Chicago as a great lake port with Superior City, its distance from Puget's Sound on the northern route, via St. Paul's, is 317 miles shorter than its distance from Benicia via South pass.

The lineal distances from Seattle via Northern Route and St. Paul, and from Benicia via South Pass, Council Bluffs and St. Louis, to these several ports of the Atlantic and Gulf coast, will be as follows:

	Seattle, via St. Paul.	Benicia via St. Louis.	Differences in favor of Nor'n route
Portland.....	3,249	3,831	582
Boston ..	3,352	3,696	344
New York.....	3,126	3,546	420
Philadelphia.....	2,988	3,454	466
Baltimore ..	2,966	3,355	389
Washington.....	3,004	3,375	371
Charleston.....	3,328	3,445	117
Savannah.....	3,313	3,430	117
Mobile ..	3,030	3,147	117
New Orleans.....	3,115	3,232	117
Average.....	3,131	3,453	

"The distance from Benicia to St. Louis is 2,482 miles.

"Thus the average distance from Seattle, via St. Paul, to the principal ports of the Atlantic and Gulf, is 316 miles less than the average from Benicia, via St. Louis, to the same points. This saving of distance, via St. Paul, ranges from 117 miles, as in the case of New Orleans, to 582 miles, as in the case of Portland. If the equated distances were used, it would make an additional difference in favor of the northern route of 137 miles. Thus every seat of commerce on the coast is nearer to Puget's Sound by the northern route, than to the waters of San Francisco by the central route.

"I am, however, of the opinion that no single line of railroad is the proper American solution of the problem of continental communication.

"The northern route should not alone be patronized by the government. The mail service now in operation, and about to be put in operation, indicates three lines which should share the patronage of the government; but these few facts as to distances, and the known relations between water lines and railroad lines, must show you conclusively that on this northern must pass the great carrying trade from Asia to Europe, and from Europe to Asia; that on this northern route must pass Asiatic supplies for much the largest portion of our own country and the Canadas. It is most emphatically a national route; and if we do not establish it, the British people and government will establish one north of the 49th parallel, and then we shall find ourselves in the position of the people, from whose hands had passed the sceptre of Judah."

The following table gives the sailing distances from the principal ports of Asia to those of our western coast. From this it will be seen that the average distance from the ports of Asia to Seattle is 25 miles less than to Vancouver, 63 miles less than to San Francisco, 368 miles less than to San Diego, and 65 miles less than to Mazatlan. As regards the four ports—the

mouth of the Amoor, Shanghai, Canton and Calcutta, the average distances are respectively 54, 206, 532, and 1,212 miles less than to the other ports:

From	To Seattle.	Van- couver.	S.Fran- cisco.	San Diego.	Mazat- lan.
	Miles.	Miles.	Miles.	Miles.	Miles.
Amoor .....	3,850	3,895	4,110	4,520	5,390
Shanghai.....	5,140	5,215	5,430	5,830	6,700
Canton .....	5,900	5,975	6,140	6,550	7,380
Calcutta .....	8,730	8,805	8,970	9,380	10,210
Melbourne.....	7,280	7,205	6,930	6,990	7,125
Sandwich Isl'd	2,380	2,305	2,050	2,190	2,535
Average....	5,542	5,507	5,605	5,910	6,607

If we look to European connections, the following table gives the distances from Liverpool, Havre and Bremen, European ports, to Halifax, St. Johns, Portland, Boston and New York, American ports:

From	To Halifax.	St. Johns.	Port- land.	Boston.	New York.
Liverpool .....	2,430	1,960	2,750	2,800	2,970
Havre .....	2,540	2,070	2,860	2,910	3,080
Bremen .....	3,080	2,610	3,400	3,450	3,620

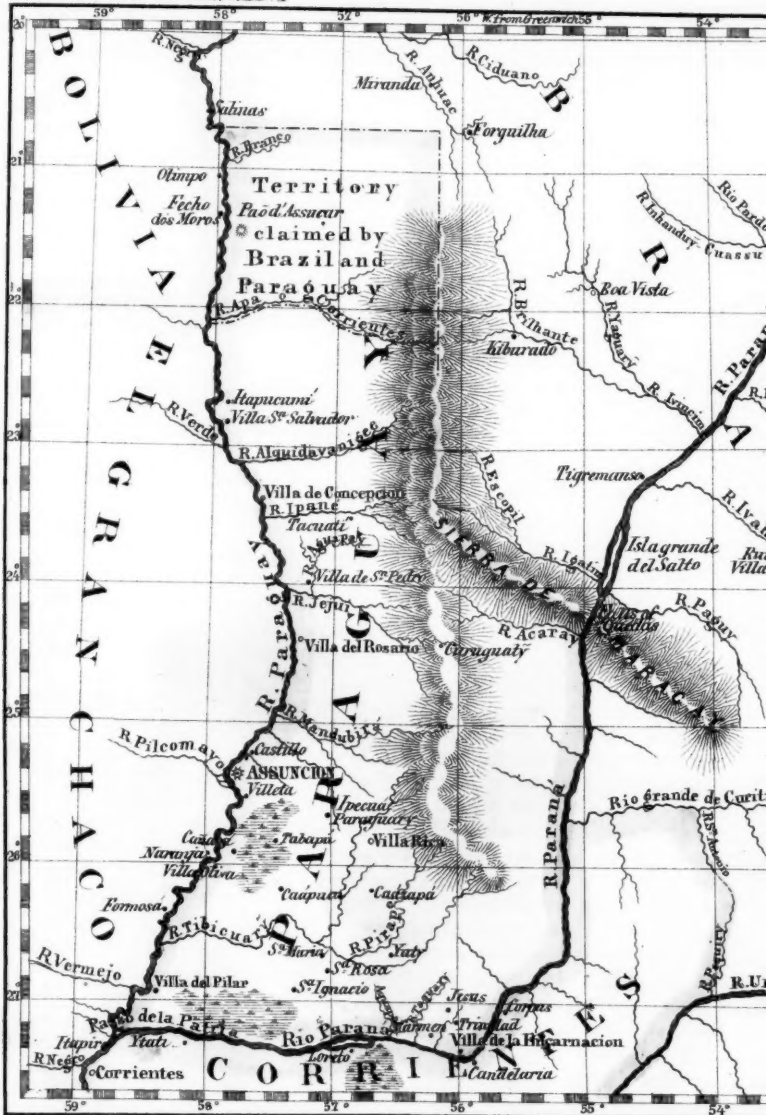
There is a scheme on foot of a railroad communication from both Halifax and St. John's to Quebec. The distance from Halifax to Quebec will be 635 miles, and to Montreal 803 miles; and from St. John's to Quebec about the same distance—making the entire distance by railroad from western connections 511 miles shorter to Portland than to Halifax and St. Johns. This great increase of distance cannot compensate for the less ocean distance from the two British ports. We thus stand in this strong position—the great water line of the lakes and its system of canals and rivers has the shortest railroad connections with American ports both on the Pacific and Atlantic coasts, making Puget's Sound the great port for all seasons of the year, and Portland the winter port of the Canadas and the depot for the whole business which will pass over the rail. The natural inference is that the Northern route is not only an eligible one, but the most feasible of all the routes as yet projected or surveyed.





## PARAGUAY.

*Journal Am. Geo. & State Soc. Vol. 1 N<sup>o</sup> 1*



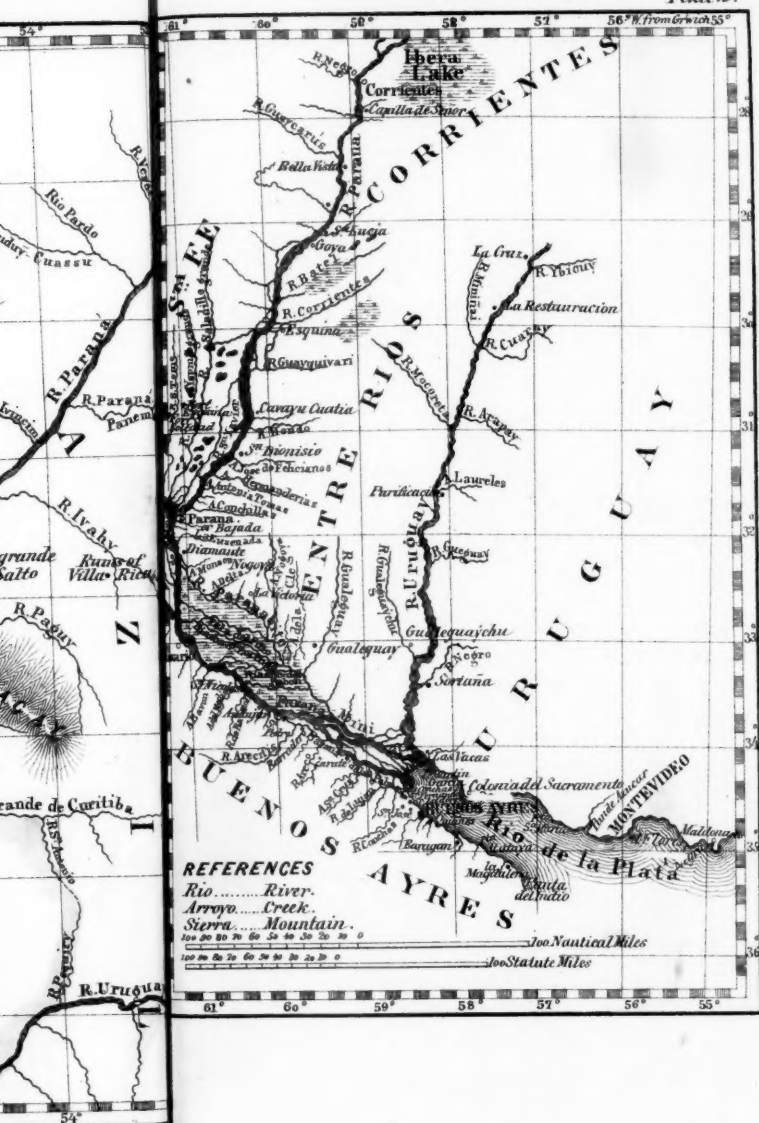
*Drawn by Geo. Schroeter.*

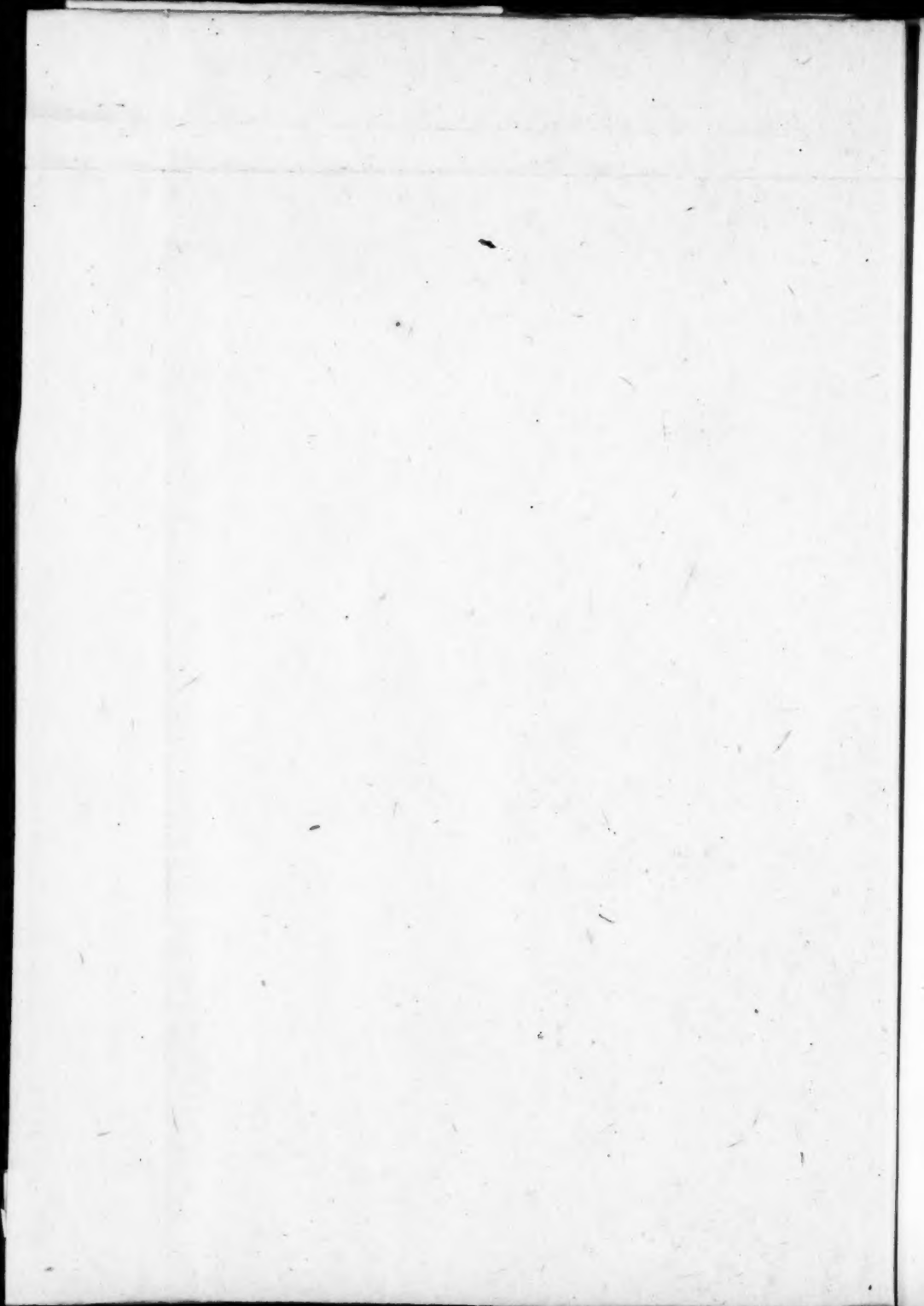
*Lith. by C. Fatzer 216 William Street*



# PARANÁ RIVER.

Plate 2.





## PARAGUAY.\*

Originally designating a vast region stretching northward to the 16th parallel of south latitude, and southward to the Straits of Magellan, and having an east and west extension from Brazil on the one side, and from the mountains on the eastern confines of Chili and Peru on the other side, the name Paraguay is now of more limited signification, and applied only to a comparatively small portion of its ancient territorial area, the present South American state of the same name.

\* Recent events affecting our political and commercial relations with the Republic of Paraguay, have attracted public attention towards that country. Without expressing an opinion upon the necessity or policy of the expedition under Commander Page, which in accordance with the provisions of a resolution of Congress, has been fitted out and dispatched to the Rio de la Plata, it is nevertheless proper that a reference should be made thereto.

—The President of the United States, in his Annual Message to Congress of December, 1857, thus states the position of this country towards Paraguay: "It being desirable to ascertain the fitness of the River La Plata and its tributaries for navigation by steam, the United States steamer *Water-Witch* was sent thither for that purpose in 1853. This enterprise was successfully carried on until February, 1855, when, whilst in the peaceful prosecution of her voyage up the Parana River the steamer was fired upon by a Paraguayan fort. The fire was returned; but as the *Water-Witch* was of small force, and not designed for offensive operations she retired from the conflict. The pretext upon which the attack was made was a decree of the President of Paraguay, prohibiting foreign vessels-of-war from navigating the rivers of that state. As Paraguay, however, was the owner of but one bank of the river, the other belonging to Corrientes, a State of the Argentine Confederation, the right of its government to expect that such a decree would be obeyed cannot be acknowledged. But the *Water Witch* was not properly speaking a vessel-of-war. She was a small steamer engaged in a scientific enterprise, intended for the advantage of commercial states generally. Under these circumstances I am compelled to consider the attack upon her as unjustifiable, and as calling for satisfaction from the Paraguayan government.

"A demand for these purposes will be made in a firm but conciliatory spirit. This will the more probably be granted, if the Executive shall have authority to use other means in the event of a refusal. This is accordingly recommended."

Upon this recommendation, Congress authorized the Secretary of the Navy to equip a sufficient number of vessels and dispatch them to the La Plata. The fleet consists of 2 frigates, 2 sloops-of-war, 3 brigs, 12 armed steamers, and 2 armed store-ships. Of these, 1 sloop, 3 brigs, and 12 steamers, can ascend the river to Asuncion, the capital.

The Republic of Paraguay is situated between  $21^{\circ} 20'$  and  $27^{\circ} 18'$  of south latitude, and  $54^{\circ} 20'$  and  $58^{\circ} 40'$  of west longitude. It forms a very compact territory nearly in the shape of a parallelogram, about 420 miles long, north and south, with an average width of from 180 to 200 miles, with an area is computed at 86,000 square miles—about twice the superficies of the State of New York.

The northern limit of this country, towards Brazil, is only vaguely ascertained. In all other directions it enjoys the advantage of well-defined natural boundaries—the great river Parana on the east and south, and its scarcely less magnificent tributary, the Paraguay, on the west. At the southwest corner of the state the Paraguay joins the Parana, and the united stream taking a southerly course through the very heart of the Argentine Confederation, is joined by the Uruguay in latitude  $34^{\circ} 20'$ , and then merges its waters into the great estuary of La Plata. The state is thus accessible from the sea by one of the grandest river systems of the world, and several of its interior waters may be navigated by steamers of considerable tonnage.

The Paraguay and the Parana, however, differ greatly in their character as navigable rivers. The Paraguay is navigable in all its extent in this country, though its course is somewhat rapid in the north, near the rocky barrier, called Fecho dos Morros, ( $21^{\circ} 20'$  N. lat.). Vessels of 300 tons may ascend it to Asuncion, and smaller vessels for several hundred miles further, and far within the boundaries of Brazil. The Parana which runs along the southern and eastern sides of the country is much less favorable to navigation. The great cataract, called Salto de Sette Quedas, near  $24^{\circ}$  S. latitude, forms an insuperable impediment, and even lower down there occurs several difficult passages where the river descends in long rapids over rocky shoals.

Almost insulated by these two rivers, the whole surface of the state belongs to their respective basins. A north and south mountain range of considerable elevation forms their

water-shed, sending the drainage in opposite directions. The distance of the water shed from the rivers scarcely anywhere exceeds a hundred miles, and hence the tributaries by which the drainage is conveyed are more remarkable for their number than for magnitude. By far the largest of these is the Tibicuary, which, owing to an easterly bend in the dividing ranges has its course considerably prolonged, and being augmented by several large affluents becomes a noble stream before it reaches the Paraguay.

The surface is also mountainous in the north-east, where a ramification known by the name of the Sierra de Maracay, breaks off from the central chain, and proceeding east to the banks of the Parana, interrupts the navigation of the river and forms one of the most remarkable cataracts in the world, and of which mention has already been made, under the name of the Salto de Sette Quedas. The river, which above the rapids is 12,600 feet wide, here enters a deep narrow gorge, and becoming suddenly contracted to 180 feet, pours down an immense flood with tremendous fury, and a noise which is heard at the distance of eighteen miles.

From the mountain region the surface rapidly descends, first presenting a finely diversified succession of lower heights, and then spreading out into rich alluvial plains, which not unfrequently in the immediate vicinity of the larger streams are converted into swamps and morasses.

The climate of Paraguay, though part of the country is within the tropics, has its excessive heats greatly modified by the inequalities of the surface; but concurs, with the natural fertility of the soil, in producing a vegetation of great luxuriance and grandeur. Unlike the open country surrounding it, Paraguay is well-wooded, and among its trees are many valuable in the arts and manufactures. It also abounds in medicinal productions, as rhubarb, sarsaparilla, jalap, sassafras, dragon's blood, capaiva, nux-vomica, liquorice, ginger, etc.; and in dye stuffs, as cochineal, indigo, vegetable vermillion, saffron, etc. Many of the forest trees yield valuable gums. The seringa, or rubber tree,

the products of which are now almost a monopoly with Para, and also the palo-santo, which produces the gum guaiacum, crowd the forests; and the sweet-flavored vanilla is abundant. Upon the hills the yerba mate, (*ilex Paraguensis*), flourishes luxuriantly, and furnishes the material of the universal beverage of South America. The plains pasture thousands of cattle, which though scarcely required for food in a country otherwise so richly provided, yield invaluable products in the shape of hides, tallow, hair, horns, bones, etc.

Thus, in all that constitutes an agricultural country—rich lands, a fine climate, and abundance of water—Paraguay has scarcely an equal. On the alluvial tracts, where cultivation is attempted with implements however primitive and imperfect, sugar cane, cotton, tobacco, rice, maize, and in short, the greater part of the most valuable products of the tropical and temperate zones are raised in profusion. If fully developed, indeed, this country would probably furnish a larger amount of human subsistence than any other tract of equal extent on the surface of the globe. Hitherto, however, various political causes have seriously interfered with its advancing prosperity. Its future can only be measured from its resources and fluvial facilities.

The wild animals of Paraguay include the jaguar or tiger, (of which there are great numbers); the puma or cougar, called also the American lion; the black bear, the ant-eater, the tapir, the capibara or water-hog, river-cavies, and various amphibious animals. Alligators are numerous in the Paraguay, and are of immense size. The wild boar, deer, and other species less known inhabit the forests; snakes, vipers, scorpions, etc., abound, and it is estimated that there are twenty different kinds of serpents, of which the rattle-snake is the most common. The boa-constrictor is found in the river swamps. Among the feathered tribes are the cassowary or American ostrich, the pea-fowl, parrots of various species, papagayos, parroquets, gold-finches, nightingales, and nine species of the humming-bird. Wild geese

abound on the rivers and lakes. Insects are found in great variety, and of extraordinary size.

The mineral resources of Paraguay are comparatively unknown; but it is supposed, and analogically proved, that both the precious and more useful minerals abound. About 17 leagues from the capital is a mountain called Acai, near which the inhabitants frequently find small lumps of silver. The policy of the government, however, has ever been to disclose as little on this subject as possible, and on one occasion a watchmaker, who had extracted gold from some ore found in the interior, was commanded by Francia, not to mention the circumstance on pain of death.

Authorities differ in estimating the amount of population in the country. Some say 300,000, others 1,000,000, and Hopkins makes it even 1,200,000 souls. The smallest estimate would make it more populous than other South American states. The dominant inhabitants are the descendants of Europeans from the north of Spain. Caste here is carried to a great extent, and the feeling of aversion which the white population entertains towards the natives, even the despotic power of Francia was unable to break down.

Of the Aboriginal tribe, the Guaranis, who inhabit the Chaco are the most numerous. The Paraguayans inhabiting the left bank of the Paraguay river are chiefly porters. A tribe called the Tobayas are a common enemy, and the government has often to make vigorous efforts to repel their inroads. Dr. Francia, however, appears to have succeeded in bringing these people into a more perfect state of civilization and subordination than has ever before been done with any nation of American Aborigines. The number of Indian villages and missions is very considerable. They generally consist of stone or mud houses covered with tiles, and have a large open square in the center in which is usually the priest's house and a church. The number of inhabitants in each is seldom less than 600, and often exceeds 2,000.

The religion of the country is the Roman Catholic, and none other is allowed to be pub-

licly exercised. Schools exist in every part of the republic, and the people are generally better educated than their neighbors in the bordering provinces. Every white male child, indeed, is obliged to attend the parish school until it has acquired the rudiments of an education. The public press consists of only two weekly newspapers, which circulate about 36,000 copies annually. The "Paraguay," issued at Asuncion, is the government organ.

The industrial position of Paraguay is probably superior to that of any other of the Spanish-American states. Secluded from commercial intercourse with foreign countries, the inhabitants have for centuries been obliged to supply their own wants. Thus, all the common handicrafts are known to them, and under Francia every one was obliged to labor at some useful occupation. Nothing whatever under his regime was brought into, or carried from the country. Since 1852, however, a new element has been added to the national industry, viz.: external commerce, which has already changed materially the aspect of affairs, and is constantly advancing.

In the years 1852-1856, the inter-changes—imports and exports and the total commerce—are reported as follows:

Years.	Imports.	Exports.	Total.
1852 .....	\$540,150	\$474,499	\$1,015,549
1853 .....	406,688	691,932	1,098,620
1854 .....	535,523	777,457	1,362,980
1855 .....	537,819	811,982	1,349,801
1856 .....	610,365	1,006,059	1,616,924

The amount of tonnage employed in the foreign trade of Paraguay, in 1856, distinguishing the clearances and the entrances, and the nationality, was as follows:

Nationality.	Cleared.		Entered.	
	Vessels.	Tons.	Vessels.	Tons.
British .....	4	1,165	4	1,165
French .....	1	84	1	84
Sardinian .....	3	705	3	705
Brazilian .....	1	27	1	27
Argentine } ....	147	6,937	139	6,440
Buenos Ayrean }				
Uruguayan .....	12	998	14	1,025
Paraguayan .....	22	1,461	9	477
Total .....	190	11,377	171	9,923
Of which, entered in ballast .....			85	3,268

The clearances for the 5 years ending with 1856, are stated in the following table :

Years.	Vessels.	Tons.	Men.
1852 .....	90	4,813	599
1853 .....	173	8,062	1,071
1854 .....	165	7,694	1,065
1855 (10 months) .....	144	9,295	1,204
1856 .....	190	11,377	1,458

And the following table gives the entrances for the same period :

Years.	Vessels.	Tons.	Men.
1852 .....	93	5,192	612
1853 .....	151	6,783	826
1854 .....	160	7,888	1,028
1855 .....	151	9,241	1,182
1856 .....	171	9,923	1,267

The chief export is the yerba mate, the sale of which is a government monopoly, and which is seldom shipped on merchant's account. The next most valuable staple is tobacco (of very fine quality), of which in 1854 there was shipped 2,600,000 pounds; in 1855, 6,780,000 pounds, and in 1856 upwards of 8,000,000 pounds. The export of hides, raw and tanned, in 1856, was 35,000—a great diminution from former years. It is said that the production of this staple is falling off. Timber and dye woods, hair, leather, molasses, rum, almidon or starch, corn, peanuts, beans, cigars and oranges, also enter into the export trade. The chief imports are foreign goods, principally English and French manufactured goods, wines, &c.

The coasting trade is not open to foreign bottoms, and is carried on solely by native boats. It is not of much present account. There is also a considerable contraband trade carried on over the Brazilian and Argentine frontiers.

Asuncion is the only port of entry open to foreign commerce. Encarnucion, Pilar, etc., are visited by Argentine and Buenos Ayrean vessels.

Previous to February, 1856, the amount of paper money in circulation was \$330,000. At that date a new issue was made of \$570,000—making the whole now in circulation \$900,000.

The revenue derived from customs on imports and exports averages about 10 per cent. on the value. The total revenue of the State is about \$750,000 per annum.

The only town of consideration in the republic is Asuncion, the capital. It is situated on the left bank of the Paraguay, a short distance above where it is joined by the Pilcomayo, 660 miles above Buenos Ayres, in latitude 25° 18' south, and longitude 57° 35' west. Originally a small Spanish fort, it has now become a place of some importance, and contains about 12,000 inhabitants. This is due to its advantageous position. It has a cathedral, three churches, four convents and monasteries, a college and theological seminary, and a hospital. Otherwise it is an ill-built and irregular town, most of the houses being built of mud, and the streets crooked and unpaved. The inhabitants carry on a considerable trade in tobacco, timber, hides and sugar, and especially in mate or Paraguay tea, with which Paraguay supplies nearly the whole of South America.

North from Asuncion are the towns of Castillo, Rosario, Concepcion and Itapucumi on the river, and San Pedro, Tacuate and Curuguaty in the interior. South of the capital are the towns of Villeta, Olivia and Pilar. In the interior, towards the southeast, are Villa Rica and several other small towns; and on the Parana, near its southernmost bend, Encarnacion, Carmen, etc. These have populations varying from a few hundreds to one and two thousands, chiefly civilized Indians.

After the Spaniards had discovered the wide embouchure of La Plata, they sailed upwards and attempted to establish a colony on the banks of the river. But in two attempts of this kind they failed, the settlements having been destroyed by the Indians of the plains. In 1535 the Adelantado, Don Pedro de Mendoza was sent out with a considerable number of vessels to found a great colony. He sailed up the Parana and Paraguay for nearly a thousand miles until he arrived at the present site of Asuncion, where he founded a town. From this point the Spaniards by degrees spread over all the countries of South America, south of the 20th parallel and east of the Andes.

In the 16th century the Jesuits were sent to these parts for the purpose of converting the



natives to Christianity. Their success, however, was not great until they obtained from the Spanish court a mandate, (1690), forbidding all other Spaniards to enter their missions without their permission.

The Jesuits, thus protected, settled among the numerous tribe called the Guaranis on both sides of the river Parana, above the island, of Apipe, and succeeded in bringing them to a certain degree of civilization. When the brotherhood were expelled in 1767, the missions were inhabited by more than 100,000 civilized Indians, of whom perhaps less than half the number were in Paraguay. They afterwards dispersed through the different parts of La Plata; but it seems that the majority settled in Paraguay, which, after that time, was entirely subjected to the viceroy of Buenos Ayres, and so continued, until the outbreak of the revolution which gave independence to all Spanish South America.

The dismemberment of the vice-royalty took place at the close of 1813. It began with Paraguay; but strictly speaking this republic could at no time be said to have formed any portion of the United Provinces as created by the patriots. It never joined in any confederacy with them; but at once in 1811 established on the ruins of the Spanish power, an independent government; and secured its independence from colonial vassalage more by the advantages of isolated position, than by any exertion on the part of the inhabitants.

Dr. Francia, whose history is that of the Republic from its independence, began his political career as secretary to the revolutionary junta in 1811. He afterwards became joint consul, and then sole consul, and in 1814 he was elected dictator for three years. In 1817 he caused himself to be elected dictator for life.

He now commenced that political system which has rendered him so famous in the world's history. He adopted as his established principle complete non-intercourse with all the world; and his government became more and more despotic at home, and the more a curse to the country. His tyranny, justly regarded as one

of the most remarkable political phenomena of modern times, was maintained by a system of espionage so vigorous, and at the same time so widely spread, as to bring fear and distrust into every household.

Robertson says that, ten years before the death of Francia, "the prisons were groaning with their inmates, commerce was paralyzed, vessels were rotting on the river-banks, produce going to decay in the warehouses, and the insolence of his soldiers was systematically encouraged as the best means of striking terror into the hearts of the crouching and insulted citizens. Distrust and fear pervaded every habitation, the nearest friends and relations were afraid of each other, despondency and despair were written on every countenance, and the only laughter heard in the city was that of Francia's soldiers over their revels in the barracks, or their exultation over the affronts offered to unoffending citizens in the streets."

Such is a picture of the country under the rule of this singular man.

At length, as full of crime as of years, Francia expired at the age of eighty-two—one of the few tyrants who have quietly died in their beds at an old age and in the plenitude of their power. He left his country impoverished, not a dollar in the treasury, and not a public or private paper of his administration unburned.

After his death (1840), a popular congress elected again two consuls to serve for two years, and the people once more breathed the air of liberty. The first acts of these magistrates were to declare the nation open to foreigners and universal commerce. In 1844 a constitutional government was established, at the head of which was placed as President, Don Carlos Antonio Lopez, who has continued and expanded the policy inaugurated by the consulate.

The benefits of this liberal arrangement, however, were for many years frustrated by the selfish policy of the government at Buenos Ayres, which, taking undue advantage of its command of the outlet of the Parana, was only too successful in crippling the trade, not only of Paraguay, but of the extensive regions be-

yond it, abounding in valuable products, to which the Parana and Paraguay furnished the only available means of transport.

This policy on the part of Buenos Ayres provoked a wide resistance, which was aided by France and England, and resulted in the flight of Rosas, the Dictator of that province, in February, 1852. This event at once changed the aspect of affairs. On the 1st of October following, in accordance with a decree of the Provisional Director of the Argentine Confederation, dated 31st August, the navigation of the Rio de la Plata, the Parana, and the Paraguay were opened to all foreign vessels, and on the 13th October of the same year, the representatives of the province of Buenos Ayres recognized the authority of the decree.

Thus the great rivers, after being closed against general commerce from the first occupation of the country by the Spaniards, were declared free. The consequences of this important concession are in the future, but there can be no doubt of its being the cause of an early development of the whole country drained by these magnificent streams, which have, according to a rough estimate, and including their navigable tributaries, a line of navigation not less than 10,000 miles in length.

## GEOGRAPHY OF THE UNITED STATES OF AMERICA.

### NO. 1.

A SERIES of articles upon the Geography of the United States, having very considerable reference to meteorological phenomena, appropriately commence with a description of the immediate valley of the Mississippi River, as it occupies the lowest depression in the great interior basin, and possesses a temperature and rain-fall less affected by causes disturbing what may be called a meteorological equilibrium, than any other portions of the continent at similar distances from the sea. The data thus obtained may be taken as a standard, or unit of measure, to which to refer the changes in the earth's surface as we leave either bank of the river,

and the consequent changes in meteoric conditions—a method of proceeding which will greatly simplify and facilitate future enquiry.

At the mouth of the Mississippi River, the astronomical, and actual or observed, mean temperatures, very nearly coincide. At New Orleans, (104 miles from its mouth), which is elevated only ten feet above the Gulf, in lat. 30° N., the astronomical mean temperature is 71° 01', while the observed mean temperature is 69° *Fahr.* On proceeding northwardly, the difference between the two rapidly increases, owing to the increased elevation of the bed of the river, and to the influence of the lofty plateaus and mountain ranges that form the boundaries of its hydrographic basin. On the parallel of 35° the astronomical mean temperature is 67° 17'; the observed mean 60°. On the parallel of 40° the astronomical is 62° 81'; the observed 53°; and on the parallel of 45° the astronomical is 57° 98'; the observed mean temperature 44½°. Other meteorological changes, particularly in the amount of rain-fall, follow, though not with similar regularity or extent. To show the degree of the southerly slope of the great basin of the Mississippi, and how far, what may be termed normal conditions are affected as it is ascended, a tabular statement is subjoined of the latitude of the several points of observation; their distances from the Gulf, and from each other; their elevation\* above the sea; the rate of the descent of the river between them; their mean annual temperatures and rain-fall—with their respective means for the seasons. The authority for altitudes is

\* The only interruption to the general character of the Mississippi from the Gulf of Mexico to the Falls of St. Anthony, are the Des Moines and Rock Island Rapids. At both of these, the river runs for a considerable distance over beds of solid rock, having inclinations, as will be seen in the table, of nearly two feet to the mile. In stages of high water they present no obstacle to the passage of the largest class steamers; but at low water, only boats of light draft can pass them. The falls on the Ohio at Louisville, and on the Wabash at Vincennes, are of a similar character, and are probably caused by a continuation of the same outcrop, that causes the Rapids at the mouth of the Des Moines River. With these exceptions, the river below the mouth of the Ohio has a muddy bed; north of this point the river bed of gravel or sand, the solid rock appearing, we believe, is only in the instances named.



Nicollet, in most instances; and for temperature and rain-fall, the observations at the United States' military posts.

Places of observation.	Latitudes.	Elevation above sea.		Distance from Gulf of Mexico.	Distance between places.	Descent per mile betw'n places.	Mean temperature.					Mean rain-fall in inches.				
		Feet.	Miles.				Annual.	Spring.	Summer.	Autumn.	Winter.	Annual.	Spring.	Summer.	Autumn.	Winter.
New Orleans .....	29° 57'	10.5	104	104	104	1.2	69.9	70.0	62.3	70.7	56.5	10.57	13.31	12.67	15.22	
Mouth of Red River .....	31° 07'	76.	340	236	66	..	67.1	68.0	81.0	67.1	52.2	57.75	14.92	13.06	13.33	16.44
Natchez .....	31° 34'	86.	406	66	..	..	60.8	61.1	78.1	61.4	42.6	41.80	11.00	7.80	7.90	15.00
Memphis .....	35° 08'	195.7	970	564	..	..	60.8	61.1	78.1	61.4	42.6	41.80	11.00	7.80	7.90	15.00
Mouth of Ohio River .....	39° 58'	275	1,216	246	2.6	..	54.5	54.1	76.2	55.4	32.3	42.32	12.86	14.14	8.94	6.29
St. Louis .....	39° 40'	364	1,390	174	36	6.0	..	..	..	..	..	..	..	..	..	..
Mouth of Illinois River .....	39° 58'	382	1,425	36	..	..	..	..	..	..	..	..	..	..	..	..
Mouth of Des Moines River .....	40° 24'	444	1,594	168	4.6	..	..	..	..	..	..	..	..	..	..	..
Monticello, at head of Lower Rapids .....	40° 31'	470	1,609	15	20.8	..	..	..	..	..	..	..	..	..	..	..
Muscatine .....	41° 36'	523	1,693	69	..	..	..	..	..	..	..	..	..	..	..	..
Rock Island .....	41° 30'	523	1,722	29	6.1	50.3	..	..	..	..	..	..	..	..	..	..
Head of Upper Rapids .....	41° 41'	554	1,737	15	20.8	..	..	..	..	..	..	..	..	..	..	..
Dubuque .....	42° 29'	..	1,848	111	..	..	..	..	..	..	..	..	..	..	..	..
Prairie du Chien .....	43° 05'	627	1,932	84	4.5	47.6	..	..	..	..	..	..	..	..	..	..
Mouth of Black River .....	43° 10'	683	2,035	103	6.5	..	..	..	..	..	..	..	..	..	..	..
Mouth of St. Croix River .....	44° 42'	729	2,150	115	5.0	..	..	..	..	..	..	..	..	..	..	..
Mouth of Minnesota River .....	44° 53'	744	2,192	42	4.6	..	..	..	..	..	..	..	..	..	..	..
					44.6	..	..	..	..	..	..	..	..	..	..	..
					45.6	..	..	..	..	..	..	..	..	..	..	..
					70.6	..	..	..	..	..	..	..	..	..	..	..
					45.9	..	..	..	..	..	..	..	..	..	..	..
					16.1	..	..	..	..	..	..	..	..	..	..	..
					25.43	..	..	..	..	..	..	..	..	..	..	..
					6.61	..	..	..	..	..	..	..	..	..	..	..
					10.92	..	..	..	..	..	..	..	..	..	..	..
					5.98	..	..	..	..	..	..	..	..	..	..	..
					1.92	..	..	..	..	..	..	..	..	..	..	..

From the above statement it will be seen that the rate of descent of the Mississippi below its junction with the Ohio is 2.6 inches to the

mile; while the rate between the mouth of the Ohio and the mouth of the Minnesota River is 5.76 inches. That portion of the river extending from the mouth of the Ohio to the head of Rock Island Rapids, falls more rapidly than that between the latter place and the Minnesota River—the rate in the one case being 6.4 inches to the mile, and in the other, 5 inches. The rate of descent of the upper portions of the Missouri River, compared with the lower, present a similar anomaly. The St. Lawrence River has in the same manner the greatest portion of its descent midway between its sources and outlet. The total fall of the Mississippi, from the mouth of the Minnesota to the Gulf, is 744 feet in a distance of 2,192 miles; or at the rate of 4.07 inches to the mile.

In ascending from the mouth of the Minnesota, the lowest depression in the great interior basin is occupied by that river. A short distance from its junction with the Mississippi, the latter has an abrupt fall of 47 feet, which forms a complete bar to the further progress of steamboats. Its navigation from this point to its source is frequently interrupted by falls and rapids. From the Falls of St. Anthony to Itasca Lake, the source of the river, the total descent is 831 feet, in a distance of 704 miles—or at the rate of 14.15 inches to the mile. Upon portions of the river between the rapids, the descent is sufficiently gentle for navigation, and steamboats are now running from St. Anthony to Sauk Rapids, a distance of about 60 miles. Above these rapids there are still longer stretches of slack-water. From Lake Itasca the distance to the summit of the dividing ridge between the basin of the Mississippi and that of the Red River of the North is only 6 miles. This is elevated 1,680 feet above the Gulf, and is 2,896 miles from it by the course of the river.

As before stated the great depression in the continent, between the Gulf of Mexico and Hudson's Bay, is occupied by the Minnesota River, though much inferior in size to the Mississippi at their junction. This river rises in Big Stone Lake, 441 miles from its mouth. The

lower portion of it has a rate of fall still more gentle than the upper portion of the Mississippi. For the first 190 miles of its course it falls 67 feet, or at the rate of 4.2 inches to the mile. In 441 miles it falls 222 feet, or 6 inches to the mile. Big Stone Lake, with a comparatively slight expenditure, could probably be made accessible to steamboats from the Gulf of Mexico. At present boats ascend the Minnesota more than 200 miles. Big Stone Lake is on the same level with Lake Travers, the source of Red River of the North. They lie contiguous, and could be easily connected. It is stated that in wet seasons, canoes pass without difficulty from one to the other. Red River is navigable from Lake Winnipeg nearly to Lake Travers, and could easily be rendered so to the lake. The day may not be far distant in which steamboats will pass from the Gulf of Mexico to the head of Lake Winnipeg, a distance of 3,500 miles, and, by an improvement of the falls at the mouth of the Saskatchewan, by that river, to the base of the Rocky Mountains, some 1,500 miles further. It is somewhat remarkable that the highlands at the head of the Mississippi River should have a less elevation than at the head of any of its important tributaries. Lake Winnipeg is elevated 853 feet above the sea, and is only about 113 feet below the lowest summit of the water-shed between the Gulf of Mexico and Hudson's Bay. From Lake Travers on the summit to Lake Winnipeg, the distance by a direct line is about 350 miles, and by the Red River probably 550 miles, showing a rate of descent of this river of about 2.5 inches to the mile. These facts afford a striking illustration of the gentle slopes which characterize the great interior basin in both northerly and southerly directions. They descend so gradually that the rivers draining them are navigable for steamboats almost to their sources, and open markets to far distant regions, which, with rivers falling from them at the rate of 12 inches to the mile, must for generations, if not for centuries, have remained unoccupied wastes. As the head waters of the Mississippi and the Red River of the North interlock, and on the

same level, so that with a slight improvement, steamboats could be made to pass from the Gulf of Mexico to the hydrographic basin of Hudson's Bay; in the same manner the head waters of the Illinois River and the Upper Great Lakes occupy a similar level—the former, in times of floods, throwing a part of its water into Lake Michigan. A cut of 8 feet in depth would turn the waters of the lakes into the Gulf of Mexico, so nicely poised in the centre of the continent are these great inland seas. By means of the Illinois Canal large boats pass from one basin to the other. These facts present, in a remarkable manner, the provision made by nature for the internal commerce of the country. Had the dip of the southern slope of the Great Mississippi basin been at the rate of 12, instead of 4.7 inches to the mile, the entire condition and destiny of the American continent would have been changed. Instead of a nation of 30,000,000, already occupying more than 1,000,000 square miles, every portion of it traversed by natural and artificial navigable water courses, and by nearly 30,000 miles of railroad, all the territory we should have occupied would have been a narrow belt lying immediately on the sea shore, from the difficulty of carrying the bulky products of the interior to market.

The highest elevation between the Gulf of Mexico, and the rivers falling into Lake Winnipeg, west of the Missouri and its tributaries, will not probably exceed 2,000 feet. These lie at the head of Big Sioux River, and west of Big Stone Lake, at the head of the Minnesota River. The summit of the ridge, at the head of the Mississippi, is, as we have already stated, 1,680 feet. The lowest point between the Mississippi and Lake Superior, at their nearest approach in lat.  $46^{\circ} 45'$  N., is 1,324 feet, or about 700 feet above the lake, and 80 feet above the river. The hills that form the water-shed of the south shore of Lake Superior rise to an elevation of about 1,500 feet, although at the head of St. Croix river there is a depression in the summit, which is only 356 feet above the lake, and is almost exactly in the same level

with the lowest summit between the Minnesota, and the Red River of the North.

The meteorological phenomena at the different points on a river traversing  $20^{\circ}$  of latitude must, under all circumstances, be extremely varied. The difference in the mean temperature between New Orleans and the mouth of the Minnesota River, is  $25^{\circ} 3$ , and the difference in the mean annual rain-fall, is 25.78 inches: in other words, twice as much rain falls at the former as at the latter place. But the difference of summer temperature between the two places is only  $11^{\circ} 7$  Fahr.—that at New Orleans being  $82^{\circ} 3$ , and at the mouth of the Minnesota,  $70^{\circ} 6$ . At New Orleans the average amount of rain-fall for summer is 13.35 inches, and at the mouth of the Minnesota, 10.92 inches. As only one important crop is annually grown in any part of the valley, and as every portion of it has, for the summer months, sufficient heat and moisture for the maturing of the crops appropriate to its different portions, the economic difference between the climate of New Orleans and St. Paul is by no means to be measured by the difference of heat or rain-fall for the year at the two places. It is probable that the products of the soil per acre in Minnesota will be quite as valuable as the average products of any of the States bordering the river, though a higher culture may be required as we ascend northward.

Of the crops in the Mississippi Valley, Indian corn is common to the whole extent of it. In all the Northern States this matures in favorable seasons in from 100 to 120 days. Oats cover the next widest belt, their successful culture extending very nearly to the Gulf of Mexico. Irish potatoes come next. Commencing from the Gulf is a narrow belt of sugar lands extending north to lat  $31^{\circ}$ . The cotton belt extends from the Gulf to lat.  $35^{\circ}$ . At this parallel commences the cultivation of tobacco and hemp, which in the Mississippi Valley is confined chiefly to the States of Tennessee, Kentucky and Missouri. The cultivation of wheat, oats and potatoes extends far north into the British possessions. Throughout the whole

extent of the Valley of the Mississippi, forest trees, bearing witness to the excellence of the soil and climate, have a vigorous and thrifty growth and attain a large size. In all respects this great valley for its whole extent is wonderfully fitted for the abode of man.

The following table will show the elevation of different points of the upper portions of the basin of the Mississippi above, and their distances from, the Gulf of Mexico:

	Distance from the G. of Mexico. Miles.	Elevat'n above the G. of M. Feet.
Summit of Dividing Ridge at the head of the Mississippi River.....	2,896	1,680
Itasca Lake.....	2,890	1,578
Cass Lake.....	2,755	1,402
Swan River.....	2,564	1,290
Mouth of Crow Wing River.....	2,380	1,130
Falls of St. Anthony.....	2,200	856
Mouth of Minnesota River.....	2,192	744
Height of Land at head of Big Sioux River.....	.....	1,896
Coteau des Prairies.....	.....	2,000
Devil's Lake.....	.....	1,476
Coteau des Prairies du Missouri.....	.....	2,096

#### MOUNTAINS OF NORTH CAROLINA.

It is not unknown among scientific men that the highest peak in the United States, east of the Rocky Mountains, is in the magnificent mountain scenery of North Carolina and East Tennessee, which may be called the Switzerland of the Atlantic States.

Heretofore, it has been supposed that Mount Mitchell, (named from the late Prof. Mitchell, of the University of N. C., who first measured its true altitude, as has been conclusively shown by Professor Charles Phillips, of the same institution,) is the highest peak. It is 6,711 feet high. It would, however, appear from the communication below, that there is a still higher peak in the great Smoky or Unaka range of mountains, on the line between North Carolina and Tennessee, near the head waters of the Oconaluftee and Little Pigeon rivers.

#### Messrs. Editors:

I have recently had letters from S. B. Buckley, Esq., giving me information of the results of recent explorations he has been making

among the mountains of North Carolina. Since the letters reached me, I have had the additional pleasure of a personal interview with Mr. Buckley, and now enclose the most important of the facts I have derived from him, in the hope that you will deem them worthy of preservation in your "Journal," as a contribution to the Physical Geography of the United States.

Very respectfully yours,

F. L. H.

New York, December 31, 1858.

*Mount Le Conte*—so named in honor of Prof. J. Le Conte, of Columbia, S. C. This is 6,670 feet high, situated three miles north of the gap of the road leading from the head waters of the Oconaluftee, in Jackson County, North Carolina, down those of the Little Pigeon to Sevierville, in Tennessee.

*Safford's Peak*—named thus in compliment to Prof. Safford, the State Geologist of Tennessee—is 6,559 feet high, and is at the east end of Mount Le Conte. These two are entirely in Tennessee.

*Mount Guyot*—so called from Prof. Guyot, of Princeton, who has also made measurements of some of these mountains. This elevation reaches to the height of 6,734 feet, and is on the state line, about twelve miles N. E. of Mount Le Conte.

*Mount Henry*—in honor of Prof. Henry, of the Smithsonian Institute. This is nearly one mile north of Mount Guyot, and is 6,425 feet high. All these are in the range of what are called the Smoky Mountains, and have never before had specific names bestowed on them.

*Mount Buckley*—so named by the associate of Mr. Buckley in his work. This is the highest peak yet measured; and both this and Mount Guyot are higher than Mount Mitchell. Mount Buckley, 6,755 feet high, is about twenty miles southwest of Mount Guyot. It is at the spot marked "Alpine," on the geological map of Tennessee, and the state line passes over its summit. This, so far as we now know, is the highest point in the United States, east of the Rocky Mountains.

Many other elevations were measured by Mr. Buckley, of which he furnished me with memoranda, of which I will not now speak. He has given me, however, some notes of the *Flora* of these mountains, which I subjoin.

These elevations, he remarks, very satisfactorily show why Western North Carolina and Eastern Tennessee have a northern climate though in a southern latitude. His observations also demonstrate that the highest mountains at the South are not the sources of the largest rivers.

He found the loftiest mountains covered with *Abies Nigra* and the *Abies Fraseri*; these are rarely found however below an elevation of 4,000 feet. The largest tree he met with in these mountains is the *Liriodendron Tulipifera*, called "tulip tree" in New England, and "poplar" in the South and West. He found trees varying in diameter from five feet to eleven feet.

The chestnut (*Castanea Americana*) also attains to great size, and retains an almost cylindrical trunk for fifty feet or more. In Haywood county, in one locality, three were found, the average diameter of which was ten feet.

The *White Oak*; this was found from sixteen to nineteen feet in circumference.

*Abies Canadensis*—the "spruce pine" of the South and hemlock of the North—is quite common, but rarely at an elevation of more than 4,000 feet. Its circumference, in some instances, is from 16 to 19 feet.

*Abies Nigra*.—The Black Spruce; it is called by the inhabitants *he-balsam*.

*Abies Fraseri*, called *she-balsam*, because it yields more balsam than the preceding. In the mountains of Haywood county it reaches a height of 100 feet, with a diameter at the base of three or four feet. It has been doubted whether this tree is to be found in New England; but Mr. Buckley has seen one from the White Mountains. The white pine of New England is found in the mountains of Haywood county, and is probably among the highest trees in that locality. Mr. Buckley saw one at least 150 feet in length; the usual diameter, however, rarely exceeded three feet. This is probably the southern limit of the white pine.

*Magnolia*, called the cucumber tree. This grows to an immense size. The largest seen had a circumference of 24 feet, and its usual diameter was from three to four feet.

*Black Walnut*.—This is not uncommon, and has been seen with a circumference of 16 feet. It is much used by cabinet makers.

*Pinus Pungens*.—This is a rare species of pine, remarkable for its singular and beautiful cone. Michaux saw a solitary specimen on Table Rock, near Morganton, and has described it. Mr. Buckley has supplied the Messrs. Parsons, of Flushing, L.I., with some of the seed.

The *Catalpa* is indigenous, and is found not only on the mountains, but also in other parts of the State.

The trees above mentioned will suggest to those acquainted with climatology, as indicated in the vegetable productions of a country, the existence of a winter climate in a part of North Carolina not unlike that of our more northern latitudes. In fact, there is no portion of the United States more salubrious than the mountains of North Carolina.

Supplementary to the above remarks by our respected contributor, we append in tabular form, a description, which we have obtained from another source, of the several mountains measured barometrically by Professor Buckley in 1858.

#### 1. HIGHEST MOUNTAINS OF WESTERN NORTH CAROLINA.

	Feet.
<i>Cold Mountain</i> : near the forks of Pidgeon River, Haywood County.....	6,103
<i>Shining Rock</i> : a white quartz mountain five miles south of Cold Mountain....	6,063
<i>Wilson's Balsam</i> : from four to six miles south of Shining Rock.....	6,270
<i>Mount Hargroce</i> : one mile west of Wilson's Balsam.....	6,156
<i>Devil's Court House</i> : south of, and connected with Wilson's Balsam.....	6,057
<i>Mount Hardy</i> : at the head of Tuckasee, French Broad and Pidgeon Rivers, and long supposed by many to be the highest mountain in the State.....	6,257
<i>Mount Lenoir</i> : ten miles north of Mount Hardy, at the head of Carey Fork, and near Balsam Spring—a rough balsam mountain.....	6,413

<i>Mount Cathey</i> : three miles north of Mount Lenoir.....	5,742
<i>Amos Plotts' Balsam</i> : near the head of Jonathan's Soco and Scott's Creeks....	6,406
<i>Mount Starling</i> : on the Cataluche Road....	6,456
<i>Mount Emmons</i> : or, Emmons' Balsam Mountain, south of Mount Starling....	6,465
<i>White Side Mountain</i> .....	5,076
From the top of White Side to the base of its precipice on its south side....	1,510
<i>Mount McDowell</i> : twelve miles northeast of White Side.....	5,106

#### 2. HIGHEST PEAKS OF SMOKY MOUNTAIN.

On or near the line between N. Carolina and Tennessee.

<i>Mount Guyot</i> : Near the head of Ravensfork, a tributary of the Oconaluftee in Jackson County, North Carolina, and fifteen miles southwest from where Pidgeon River, enters Tennessee.....	6,734
<i>Mount Le Conte</i> : north of the road leading up Little Pidgeon River, over the mountains in North Carolina, and three miles from said road and near Album Cave. It is entirely in Tennessee, and is probably the highest point of land in that State.....	6,670
<i>Peck's Peak</i> : three miles east of Mount Le Conte.....	6,338
<i>Mount Collins</i> : second peak of the highest peak.....	6,241
<i>Mount Mingus</i> : first peak north of the road above mentioned.....	5,779
<i>Buckley's Peak</i> : the highest of the Smoky Mountains near the head of Deep Creek and Noland's Creek, tributary to the Tuckasee in North Carolina and Little River in Tennessee, lying partly in Sevier County, Tennessee; and it is possible that a portion of it may be in Blount County, Tennessee. It is covered with fine balsam.....	6,755
<i>Mount Washington</i> , as reported by Joel W. Andrews, in the Report of the Regents of the University in New York, for 1855, is elevated 6,496 feet above the sea. Hitherto its height has been variously stated at 6,526 feet (Lippincott's Gazetteer) and 6,428 feet, (Fisher's Gazetteer.)	

[Communicated.]

#### THE PROPOSED NEW TERRITORIES—AN IMPORTANT INQUIRY IN REFERENCE TO THEM.

As general attention is now directed to the proposed territories of Colona, (?) Laramie, Ne-

vada and Arizona, on account of their well-known mineral wealth, the extent of their agricultural capacities becomes an interesting subject of inquiry.

Thus far, all authorities concur in representing the immense area out of which these new territories are to be erected, as well as New Mexico and Utah, to be comparatively a *rainless* region, in which no crops can be grown, except by irrigation. Should this prove to be the case, their future value and importance must be much less than is generally anticipated.

There will undoubtedly be a very large emigration, on the opening of the season, to the gold fields recently discovered in the vicinity of Pike's Peak. Can food be raised for it in the vicinity of the mines? The wild animals that now contribute largely to the support of the miners will soon disappear. The country is probably well-adapted to grazing, but something else is required for a large and prosperous State. There are, undoubtedly, tracts of bottom lands, that can be irrigated, but not of sufficient area to sustain a large population.

Only a very small amount of rain falls upon any of the plains that skirt the eastern and southern base of the Rocky Mountains, or upon the plains that lie between these and the Sierra Nevada range. The lofty summits of both condense the small amount of moisture carried inland from the sea. Upon these there is a considerable deposit of moisture. They are the source of all the rivers in the territories described. Does the rain descend their slopes sufficiently far as to fall in quantity upon arable lands? What little that can be collected upon this point shows that it does not. Mr. Graham, the recently elected delegate to Congress from Colona, states, in a letter describing that country, that no rain falls there after June.

The subject of this inquiry is an important one, and these remarks are designed to invite communications in reference to the meteorology of all that portion of the continent east of the Sierra Nevada and Cascade ranges of mountains, and west of the 99th meridian from Greenwich.

P.

## DEPARTMENT OF STATISTICS.

## INDIA: ITS EXTENT AND POPULATION.

## I.—BENGAL PRESIDENCY—

a. Under the Governor General in Council :  
Area: sq.m. Populat'n.

1. Punjab—viz., Lahore, Jhelum, Moulton, Leila, Peshawur, Jullunder.	73,535	10,435,710
2. Cis-Sutlej States.....	8,090	2,282,111
3. Oude.....	25,000	5,000,000
4. Nagpore or Berar....	76,432	4,650,000
5. Pegu.....	32,250	570,180
6. Tenasserim Provinces.	29,168	115,431
7. Eastern Straits Settlements, Singapore, etc.	1,575	202,540
Total.....	246,050	23,255,972

## b. Under Lt.-Governor of Bengal:

1. Regulation Provinces—viz., Patna, Bhaugulpore, Moorshedabad, Dacca, Jessore, Sunderbunds, Chittagong, Cuttack.....	126,133	37,262,163
2. Non-Regulation Provinces—viz., Assam, Cachar, Territory resumed from Toola Ram Senahputter, S.W. Frontier, Arracan.....	95,836	3,590,234
Total.....	221,969	40,852,397

## c. Under Lt.-Gov. of N.W. Provinces:

1. Regulation Provinces, —viz., Delhi, Meerut, Rohilkund, Agra, Allahabad, Benares.....	72,052	30,271,885
2. Non-Regulation Provinces—viz., Kumaon and Ghurwal, Jaunsar and Bawar, Dehra Dhoon, Khote Kasim, Bhutti Territory, Jalam and Jansi, Ajmere, British Mhainwarrah, Saugor and Nerbudda, British Nimaaur.....	33,707	3,383,308
Total.....	105,759	33,655,193

Total Bengal Presidency. 573,778 97,763,562

## II.—MADRAS PRESIDENCY—Under Lt.-Gov. of Madras:

1. Regulation Provinces, —viz., Rajahmundry, Masulipatam, Guntoor, Kurnoul, Cudapah, Nellore, Bellary, N. Arcot, S. Arcot, Chingleput, Madras City, Salem, Coimbatore, Canara, Malabar, Trichinopoly, Tanjore, Madura, Tinnivelly..	119,526	20,120,495
2. Non-Regulation Provinces—viz., Ganjam, Visagapatam, Coorg..	12,564	2,316,802

Total Madras Presidency. 132,090 22,437,297



## III.—BOMBAY PRESIDENCY—Under Lt.-Gov. of Bombay:

1. Bombay—viz., Ahmedabad, Kaira, Broach, Surat, Tannah, Candesh, Bombay and Colaba Islands (incl. C. of Bombay), Poonah, Ahmednuggur, Sholapur, Rutnagherry, Belgaum, Dharwar.....	57,723	9,015,534
2. Sattara.....	10,222	1,005,771
3. Sinds—viz., Shikarpoor, Frontier Districts, Hyderabad, Kurrachee, Thur and Packur.....	63,599	1,768,737

Total Bombay Presidency. 131,544 11,790,042

Total of three Presidencies.. 837,412 131,990,901

## IV.—NATIVE STATES—Under British protection:

## a. Subordinate to Bengal:

1. Gwalior (Scindia's Dominions).....	33,119	3,228,512
2. Golab Sing's Dom'ns.....	60,000	3,000,000
3. Hyderabad (Nizam's Dominions).....	95,337	10,666,080
4. Indore (Holkar's Dominions).....	8,318	815,164
5. Nepaul.....	54,500	1,940,000
6. Rajpoot States.....	114,393	7,412,426
7. Saugor and Nerbudda Territories.....	12,452	1,530,384
8. Sikh Protected States.....	7,366	1,894,800
9. Other States.....	130,050	5,164,840

Total..... 515,535 38,702,205

## b. Subordinate to Madras:

1. Mysore.....	30,886	3,460,696
2. Travancore.....	4,729	1,011,824
3. Other States.....	16,194	741,151

Total..... 51,809 5,213,671

## c. Subordinate to Bombay:

1. Cutch.....	6,764	500,536
2. Kattywar Petty Chiefships.....	19,850	1,468,900
3. Kolapore.....	3,445	500,000
4. Other States.....	30,516	2,000,934

Total..... 60,575 4,460,370

Total Protected States... 627,919 48,376,247

Total of British and Protected India..... } 1,465,331 180,367,148

## V.—FRENCH POSSESSIONS:

1. Chandernagore.....	4	31,396
2. Karikal.....	63	59,872
3. Mahe.....	2	3,419
4. Pondicherry.....	107	96,712
5. Yanam.....	13	6,464

Total of French India. 189 197,863

## VI.—PORTUGUESE POSSESSIONS:

1. Goa, Salcette, Bardez.....	1,458	363,788
2. Damaon.....	83	33,950
3. Diu.....	12	10,658

Total Portuguese India. 1,553 408,596

## VII.—INDEPENDENT NATIVE STATES:

1. Bhotan.....	34,506	1,812,000
2. Nepaul.....	35,208	1,880,000

Total Independent India. 69,714 3,692,000

## RECAPITULATION.

## BRITISH INDIAN EMPIRE:

Bengal Presidency.....	573,778	97,763,562
Madras Presidency.....	132,090	22,437,297
Bombay Presidency.....	131,544	11,790,042

## NATIVE STATES SUBORDINATE TO THE BRITISH:

Under Bengal.....	515,535	38,702,206
Under Madras.....	51,809	5,213,671
Under Bombay.....	60,575	4,460,370

Total British India..... 1,465,331 180,367,148

French Indian Possessions..... 189 197,863

Portuguese Indian Possessions.. 1,553 408,596

Independent Native States. .... 69,714 3,692,000

Total of India..... 1,536,787 184,665,607

Deduct Pegu, the Tenasserim Provinces, and the Eastern Straits Settlements in Further India, dependent on Bengal..... 62,993 888,151

Total in Hindostan..... 1,503,794 183,777,456

The table appearing above, has been compiled from the returns of 1856, and with the intention of exhibiting in a concise form the political divisions of the great middle peninsula of Asia and its dependencies, chiefly those portions composing the British Indian Empire as now organized, and which has recently been erected into a royal government under the immediate sovereignty of the Queen of England. It exhibits also the extent and population of the French and Portuguese Possessions—small, indeed, but valuable as trading stations; and also the extent and population of the states which still retain their nominal independence. Until lately, the Danes held Tranquebar and Serampore, the first on the Coromandel coast and the latter in Bengal: these were purchased by the British.

The recent transfer of the Government of India from the East India Company to the Crown, did not change the political subdivisions of the country.

## STATISTICS OF AMERICAN STATES.

NO. 1.

## REPUBLIC OF ECUADOR.

Lat. 1° 40' N. to 5° 50' S. | Populat'n (1858) 1,308,042  
 Long. 68° 35' to 81° 20' W | Density, 6.51 to sq. mile.  
 Area, 206,692\* sq. miles | Capital, Quito.

## CONSTITUTION.

*Executive.*—President and Vice-President, elected by the people through electoral colleges, for four years. President's salary \$12,000 per annum.

*Administration.*—1. Minister of Interior and Foreign Affairs; 2. Minister of Finance, and 3. Minister of War and Marine.

*Council of Government.*—All the ministers, a judge of the Supreme Court, and an ecclesiastic. The Vice-President of the Republic is President of the Council.

*Legislature.*—A Senate of 18 members, 6 from each district, and a House of Representatives of 30 members, 10 from each district. Senators are elected for 6 years, and representatives for 2 years. Assemblies annually at the capital on the 15th September.

*Judiciary.*—A Supreme Court of Appeals at Quito; Superior Courts at Quito, Guayaquil and Cuenca, capitals of districts; and Provincial Courts at Quito, Ibarra, Tacunga, Riobamba, Esmeraldas, Santa Rosa, Guayaquil, Porto Viejo, Cuenca and Loja, capitals of provinces. At Guayaquil there is also a Commercial Court.

*National Religion.*—The Holy Apostolic Roman Catholic. The Church is under the superintendence of the Archbishop of Quito and the Bishops of Guayaquil and Cuenca, and has 20 prebendaries, 2 vicars-general, 27 vicars, 276 parish priests, etc.

## HEIGHTS OF THE ECUADORIAN ANDES.

Eastern Cordillera.		Western Cordillera.	
Peaks.	Feet.	Peaks.	Feet.
Cayambe.....	19,813	Chimborazo.....	21,371
Antisana.....	19,307	Iliniza.....	17,649
Cotopaxi.....	19,162	Caslagua.....	16,864
Llanganate.....	18,639	Cotacachi.....	16,651
Altar.....	18,639	Pichincha.....	16,213
Sincholagua.....	17,473	Corazon.....	16,169
Sangai.....	17,284	Atacasho.....	16,169
Collanes.....	17,284	Chiles.....	15,952
Sara-Ureua.....	17,276	Carahuirazo.....	15,916
Tunguragua.....	16,514	Yana-Ureua.....	15,913
Azuay.....	15,749	Quilindana.....	15,913

## RIVERS OF ECUADOR.

1. *Emptying into the Amazon*—Napó, Santiago, Morona, Chinchipe, Tigre, Nanay.

\* Including the Gallapagos Islands, which constitute a canton of Quito.

2. *Emptying into the Ocean*—Mira, Esmeraldas, Guayaquil, Santiago, Jubones, Naranjal, Charapoto, Chones, Tumbes.

## POPULATION OF PROVINCES.

Provinces.	Cantons.	Parishes.	Populat'n.
I. DISTRICT OF QUITO:			
1. Pichincha.....	1	39	154,081
2. Imbabura.....	4	32	130,494
3. Leon.....	4	36	221,820
4. Chimborazo.....	4	44	197,105
5. Esmeraldas.....	1	5	9,183
6. Oriente.....	3	7	19,385
II. DISTRICT OF GUAYAS:			
7. Guayaquil.....	9	33	92,696
8. Manavi.....	4	12	39,851
III. DISTRICT OF AZUAY:			
9. Cuenca.....	3	43	171,300
10. Loja.....	2	26	72,159
Total, 1858.....	35	277	1,108,042

## Classification.

Europeans and Creoles.....	601,219
Civilized Indians.....	462,400
Mestizos and Sambos.....	36,592
Negroes, pure.....	7,831

## Sexes.

Males.....	575,496
Females.....	592,586

## Former Census Returns.

1826.....	555,700	1846.....	869,892
1836.....	706,320	1856.....	1,086,981

Add to each census 200 000 for uncivilized Indians.

## CAPITALS OF PROVINCES.

1. Quito, 80,000; 2. Ibarra 13,000; 3. Tacunga, 16,000; Riobamba, 16,000; 5. Esmeraldas, 600; 6. Santa Rosa, 150; 7. Guayaquil, 22,000; 8. Porto Viejo, 1,000; 9. Cuenca, 25,000; 10. Loja or Loxa, 12,000.

## PUBLIC INSTRUCTION.

Classification of Schools.	Number.	Scholars.
Primary for Males.....	260 }	9,249
Academies do.....	3 }	
Primary for Females.....	30 }	2,783
Seminary do.....	1 }	
Special and professional.....	8 }	1,299
University at Quito.....	1 }	
National Colleges.....	6 }	
Mixed College.....	1 }	
Total.....	310	13,331

—Distributed to the provinces, thus:

Pichincha.....	2,928, or 1.9 per cent.
Imbabura.....	1,535, or 1.2 "
Leon.....	1,753, or 0.8 "
Chimborazo.....	923, or 0.2 "
Esmeraldas.....	80, or 0.9 "
Oriente.....	114, or 0.6 "
Guayaquil.....	1,926, or 2.1 "
Manavi.....	443, or 1.1 "
Cuenca.....	1,929, or 1.2 "
Loja.....	900, or 1.2 "



## NATIONAL FORCES.

*Army*.—General Staff, 296; Artillery (one brigade) 190; Infantry (two battalions), 380; Column of Pichincha, 135; Column of Babayhoya, 135; Lancers (First Squadron), 120; Lancers of Taura, 120; Lancers, (Second Squadron), 70; Police, (one company), 50.—total, 1,496.

*Navy*.—Steamers, "Machala" and "Guayas," and mailboat "Olmeda."

## PUBLIC FINANCE.

1854-5..Receipts.....	\$1,310,383
Expenditures.....	1,728,319
1855-6..Receipts.....	1,372,800
Expenditures.....	1,358,498

## PUBLIC DEBT.

Foreign.....	£1,824,000, or \$9,120,000
Interior.....	4,293,314
Total Debt.....	\$13,493,314

## COMMERCE, 1855-6.

Exports from Guayaquil:	
Silver (plata sellada).....	\$42,022
Gold, (oro sellada).....	25,540
Merchandise.....	2,187,131
Total.....	2,254,693
Exports from Manta—Merchandise.....	\$78,448
" to New Granada, by land.....	300,000
" " Peru, by land.....	100,000
Total Exports.....	\$2,723,141
" " 1854-5.....	2,119,648
Imports into Guayaquil.....	\$2,374,439
" " Manavi.....	112,267
" from New Granada by land.....	40,000
" from Peru, by land.....	100,000
Total Imports 1855-6.....	\$2,626,706
" " 1854-5.....	1,914,645

## QUANTITY OF EXPORTS.

Articles.	Guayaquil.	Manta.
Cacao, cargass.....	164,093	1,956
Sombreros, dozen.....	35,504	3,090
Alfajias.....	8,229	....
Manyles, pieces.....	8,215	....
Zuelas.....	24,267	....
Pita, lbs.....	13,753	6,217
Tamarinda, qtls.....	925	....
Tobacco.....	3,795	38
Cascarilla.....	7,006	....
Sarsaparilla.....	684	....
Liken ( <i>Orchilla</i> ).....	2,151	....
Canas, No.....	80,861	....
Coffee, qtls.....	1,021	....
Lena ( <i>cool</i> ) lbs.....	603,868	....
Caucho ( <i>india rubber</i> ) qtls.....	1,609	732
Hamacas.....	287	25
Bayeta, varas.....	12,091	....

Articles.	Guayaquil.	Manta
Pellones ( <i>fruit</i> ) cargass.....	435	....
Aguardiente, botijas.....	317	....
Chocolate, arrobas.....	....	249
Manteca Cacao, lbs.....	....	570
Almidon ( <i>starch</i> ) arrobas.....	....	10
Pita floja.....	....	1,900

## COCOA EXPORTED FROM GUAYAQUIL.

1847.....lbs. 12,673,613	1852.....lbs. 13,965,548
1848.....21,007,565	1853.....13,243,024
1849.....14,234,734	1854.....10,993,141
1850.....11,066,056	1855.....15,089,755
1851.....9,567,068	1856.....13,276,608

## COMMERCE WITH UNITED STATES.

(From the U. S. Commerce and Navigation Tables.)

Value of Exports.		Value of Imports.	
Domestic.	Foreign.	Total.	Imports.
1850.....\$24,414	\$10,511	\$34,925	\$4,618
1851.....	....	....	....
1852.....	....	....	70,585
1853.....	....	....	12,600
1854.....	....	....	57,534
1855.....66,092	....	66,099	12,534
1856.....27,374	2,066	29,440	84,804
1857.....34,546	2,630	37,176	15,803

The port of Guayaquil and those of Manta and San Lorenzo are open to general commerce; and the ports of Santa Elena, Callao, Bahia de Caracas, Loja and Ibarra for the exportation of national produce only. Guayaquil is the only port of general deposit for re-exportation to foreign ports.

The duties on navigation in the ports of Ecuador are—tonnage dues, 25 cents per ton; light dues,  $6\frac{1}{4}$  cents per ton; and pilot fees (when a pilot is employed) \$2 50 per foot of the vessel's depth.

For Tariff, see Commercial Relations, vol. 2.

## WEIGHTS, MEASURES, AND MONEYS.

*Weights*.—1 libra=(460.1 grammes or 1.0144 lb. avoirdupois)=2 marcos=16 onzas=128 ochavas=256 adarmes=768 tomines=9,216 granos=2,000 lbs.=80 arrobas=20 quintales=1 tonelada. The carga=81 libbras.

*Measures—Liquid Capacity*.—1 cantara (=16.07 litres or 4.24 gallon)=4 quartillas=8 azumbres=32 quartellos=128 copa.

*Dry Capacity*.—1 cahiz (=563 litres or 19.2 bushels)=12 fanegas=144 almudes=288 medios=376 quartillos.

*Length*.—1 vara (=0.8475 metre or 0.93 yard)=3 pies=4 palmos=36 pulgadas=48 dedos=432 lineas=5,184 puntas. The estadal=4 varas.

*Vinery.*—1 legua=8,000 varas.

*Agrarian.*—1 yugada = 50 fanegadas = 600 celemines = 28,800 square estadales = 460,800 square varas.

*Moneys.*—On the Spanish basis, and in pieces as follows:

*Gold.*—The onza and half onza, the doblon [ $\frac{1}{4}$ ] and escuda [ $\frac{1}{8}$ ]: the doblon=\$16 in silver.

*Silver.*—The peso fuerto or dollar and its half and quarter; also the peseta of two reals, and the real and its half and quarter.

By decree of December 5, 1856, the metrical system of France was legalized and adopted as the national standard of weights, measures and moneys. The new coinage was to be in part issued on the 15th of October, 1858. The peso fuerto or hard dollar will, hereafter, be equivalent to the five franc piece of France and its subdivisions in proportion.

## MISCELLANEOUS STATISTICS.

### POPULATION OF CANADA.

The following table exhibits the progress of population in Canada for the 10 years ending with 1857:

	Lower Canada.	Upper Canada.	Total.
1848.....	768,835	723,087	1,491,922
1851.....	890,261	952,004	1,842,265
1857.....	1,220,514	1,305,923	2,526,437

Increase in 10 years.	451,679	582,836	1,034,515
Rates of inc. per cent.	58.7	80.6	69.8

—The area of Lower Canada is 210,020, and of Upper Canada 121,280 square miles. Hence the density of population in the first is 5.8 and the latter 10.7 to the square mile. It must, however, be remarked that less than one-sixth of the whole area of Lower Canada is yet occupied, and but little more than one-fourth of that of Upper Canada; and hence the population in the settled portions of the country is in reality on a corresponding multiple the more dense.

### POPULATION OF NEWFOUNDLAND.

A census taken in 1858 states the population at 119,334. According to the census of 1845 it contained 96,295 inhabitants; and an official estimate made in 1851 stated the number at 101,600. Of the population in 1858, 55,152 were Roman Catholics, 42,859 Church of England, 20,142 Methodist, 302 Scotch Presbyterian, 520 Scotch Free Church, 347 Congregationalist, and 44 Baptist.

### ARKANSAS.

The progress of Arkansas since 1850 is exhibited in the following comparison of the census returns of 1850, 1854, and 1858:

	1850.	1854.	1858.
White Persons.....	162,189	199,224	244,310
Free Colored Persons..	608	614	734
Slaves.....	47,100	60,279	80,385
Total population....	209,897	260,117	325,429
Lands cultivated, acres.	781,530	875,180	1,288,034
Cotton produced, bales.	65,344	160,779	172,651
Corn, bushels.....	3,893,939	11,536,969	16,880,952
Wheat, bushels.....	199,639	332,535	1,139,076
Oats, bushels.....	656,283	1,040,206	2,035,730

Value of taxable property.....\$35,428,675 55,377,384 99,873,248  
—Included in the taxable property in 1858 were 360 saw mills, 104 tan yards, 56 distilleries, 2,212 pleasure carriages, 64,198 horses, 23,108 mules, 1,001 jacks and jennies, and 191,692 neat cattle.

### TAXABLE PROPERTY IN OHIO.

The development of this State is well marked in the increased value of taxable property. In 1825 the amount assessed was only \$59,525,336, and up to 1840 it was only \$128,553,657. Its increase from the latter period, quinquennially, has been as follows:

Years.	Real Estate.	Personal Prop'y.	Total.
1840.....	\$100,851,837	\$27,502,820	\$128,553,657
1845.....	108,185,744	35,984,725	144,160,469
1850.....	341,388,539	98,487,502	439,966,340
1855.....	578,858,539	283,018,815	860,877,354
1857.....	585,620,702	263,793,897	849,414,599

### BRAZIL AT THE END OF 1857.

The commerce of this Empire for the year ending December 31, 1857, was as follows:

	Imports.	Exports.	Total.
England and Possessions..	£8,190,116	£3,954,128	£12,144,244
France and possessions...	1,830,674	1,058,611	2,889,285
United States.	864,155	3,516,079	4,380,234
Other countries.....	2,876,828	4,193,783	7,070,611

Total.....£13,761,773 £12,722,601 £26,484,374

The Brazilian Debt of the same date amounted to £12,970,500, namely—foreign debt £5,345,500, (originally £6,639,800), internal debt £6,100,000, and the new Railroad loan, £1,525,000.

The Revenue of the Empire for the year ending June 30, 1857, amounted to £5,486,211. The average revenue for the three years then ending had been £4,592,333 a year. A balance of £1,744,135 remained in the Treasury.

The above returns refer to the Empire at large. Each province, however, has its own

resources and revenues, and the finances of the leading ones are in an equally flourishing condition, several have expended large sums in the construction of public works.

In calculating the values in sterling, the mil-re of Brazil has been valued at 27 pence or 54 cents.

### EDUCATION IN UPPER CANADA.

	1842.	1847.	1852.	1856.
Children, [5 to 16], of school age.....	141,143	230,975	262,755	324,888
Colleges and Universities..	5	6	8	12
County gr'mmar schools and academies....	25	32	74	89
N'm'l and Model schools.....	...	2	3	3
Private schools.....	44	96	167	239
Common schools	1,721	2,727	3,010	3,472
Total scholastic institutions ..	1,795	2,863	3,258	3,815
Of which were free schools..	....	....	901	1,263
Students in Colleges, &c.....	....	700	751	1,335
Pupils in grammar schools, &c.....	....	1,000	3,194	4,393
Pupils in private schools .....	....	1,831	5,133	5,213
Pupils in N'm'al and Model schools .....	....	....	645	772
Pupils in Common schools..	65,978	124,829	179,587	251,145
Total at School.	65,978	131,300	189,310	262,858
Teachers of common sch'ls.	....	3,028	3,388	3,689
Teachers — males .....	....	2,365	2,541	2,622
Teachers — females .....	....	663	847	1,067
Salaries of common school teachers .....	£41,500	£77,599	£107,237	£194,920
Funds available for common school houses, libraries, apparatus, &c....	...	....	25,094	74,607
Amount received by other institutions.....	....	....	36,989	62,221
Total available for educational purposes...	....	£176,094	£336,192	....
Average months taught.....	....	8.3	9.5	10

### GOLD YIELD OF VICTORIA.

The shipments of Gold from Melbourne, since the first discovery of the Victoria gold Mines in 1857, to the end of the first week of September, 1858, have been as follows:

Yearly Monthly Aver.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.
January .....	181,476	182,442	178,143	180,917	319,350	306,001	206,796	206,796
February .....	152,362	168,678	206,286	187,274	319,357	188,565	220,766	224,717
March .....	107,466	160,450	232,011	136,653	336,740	212,957	171,891	171,891
April .....	92,312	147,941	116,077	330,906	282,686	280,030	240,314	240,314
May .....	94,276	169,641	237,145	132,715	238,213	196,503	161,353	175,002
June .....	152,242	170,260	200,660	144,183	329,020	177,326	247,886	235,287
July .....	179,411	156,730	200,660	173,280	199,933	137,326	247,886	235,287
August .....	16	161,188	318,974	82,217	232,707	207,533	329,325	27,811
September .....	1,559	245,396	175,269	139,248	262,637	153,722	223,922	...
October .....	3,441	322,550	156,021	139,248	262,637	153,722	223,922	...
November .....	3,441	322,550	156,021	139,248	262,637	153,722	223,922	...
December .....	140,127	131,162	334,964	288,678	142,172	359,556	197,661	...
Yearly .....	145,146	1,974,975	2,497,723	2,144,699	2,576,745	3,003,811	2,729,655	2,729,655
Monthly Aver. ....	164,581	178,725	214,729	250,317	277,471	...	...	...

### THE AUSTRALIAN COLONIES.

In order to convey an idea of the progress the group of Australian colonies has made in population, we present the following comparison between that of 1851 and 1857.

Classes.	1851.	1857.	Increase.
Victoria .....	77,345	463,135	385,790
New South Wales....	197,168	305,487	108,319
South Australia .....	66,538	109,917	43,379
West Australia .....	5,886	10,000	4,114
Tasmania .....	70,136	100,000	29,864
New Zealand .....	26,656	50,000	23,344
Total .....	443,729	1,038,539	594,810

### CANALS IN THE UNITED STATES IN OPERATION.

The following tabular statement will show the total number of miles of Canals in the United States—embracing rivers made navigable by locks and for purposes of navigation—in use on the first day of January, 1859:

State, &c.	Total length.	Length open.	Cost of roads, &c.
Maine.....	50.50		
New Hampshire.....	2.13		
Vermont.....	1.06		
Massachusetts.....	6.60		
New York.....	1039.06		
New Jersey.....	148.70		
Pennsylvania.....	1349.00		
Delaware.....	13.50		
Maryland.....	191.00		
Virginia.....	188.98		
North Carolina.....	13.50		
South Carolina.....	52.50		
Georgia.....	28.00		
Louisiana.....	24.75		
Kentucky.....	486.50		
Illinois.....	102.95		
Wisconsin.....	50.00		
Michigan.....	.75		
Indiana.....	543.09		
Ohio.....	799.00		
<b>Total.....</b>	<b>5088.33</b>		

The cost of all the Canals is not well ascertained. It will not vary far from \$175,000,000. Several of them perform most important functions both in the local and general trade of the country. They are among the most important carriers of coal, while the Erie canal is the grand avenue for the internal trade of the country.

There are a very large number of Canals in California, having an aggregate mileage of several thousands of miles, but these are exclusively used for mining purposes.

### RAILROADS OF THE UNITED STATES, COMPLETED AND PROGRESSING,

*With the cost of road and equipment to the end of the year 1858:*

State, &c.	Total length.	Length open.	Cost of roads, &c.
Maine.....	631.4	554.9	\$19,345,567
New Hampshire.....	594.8	560.5	19,087,556
Vermont.....	557.5	537.9	21,235,184
Massachusetts.....	1480.9	1378.1	63,646,030
Rhode Island.....	86.9	63.6	2,750,450
Connecticut.....	809.5	654.4	25,098,678
<b>New Eng. States.....</b>	<b>4161.0</b>	<b>3749.4</b>	<b>\$151,163,435</b>

State, &c.	Total length.	Length open.	Cost of roads, &c.
New York.....	3476.4	2695.3	\$135,314,197
New Jersey.....	645.6	553.6	24,886,531
Pennsylvania.....	3735.5	2971.1	140,510,271
Delaware.....	119.6	91.7	1,980,665
Maryland.....	873.8	792.3	46,116,555
<b>Mid. Atlantic States.....</b>	<b>8850.9</b>	<b>7104.0</b>	<b>348,808,219</b>
Virginia.....	1776.7	1410.7	42,670,674
North Carolina.....	836.1	760.1	12,899,423
South Carolina.....	1077.8	779.8	18,431,550
Georgia.....	1554.0	1177.0	24,297,712
Florida.....	730.5	198.3	4,675,000
<b>South Atlantic States.....</b>	<b>5965.1</b>	<b>4325.9</b>	<b>102,973,359</b>
Alabama.....	1504.4	679.3	19,972,038
Mississippi.....	371.9	246.6	7,998,298
Louisiana.....	1039.0	393.0	14,297,801
Texas.....	2229.0	205.5	5,000,000
<b>Gulf States.....</b>	<b>5144.3</b>	<b>1524.4</b>	<b>47,268,137</b>
Arkansas.....	701.3	38.5	1,093,161
Missouri.....	1164.3	547.2	30,871,360
Tennessee.....	1511.9	1035.1	26,337,427
Kentucky.....	724.7	399.8	13,314,059
<b>South Interior States.....</b>	<b>4102.2</b>	<b>2320.6</b>	<b>71,616,007</b>
Ohio.....	4278.2	2988.1	124,821,055
Michigan.....	1627.8	1032.0	36,392,812
Indiana.....	1692.9	1290.9	31,055,603
Illinois.....	3177.4	2714.4	94,338,008
Wisconsin.....	2403.7	822.2	36,742,063
Iowa.....	1785.0	343.8	11,260,169
Minnesota.....	1058.0	..	500,000
<b>North Interior States.....</b>	<b>16023.0</b>	<b>9191.4</b>	<b>335,109,701</b>
California.....	170.7	22.5	1,547,100
<b>Total United States.....</b>	<b>44417.2</b>	<b>28238.2</b>	<b>1,058,485,958</b>

ACTUAL MILEAGE IN EACH STATE.		States, etc.	
States, etc.	Miles.	States, etc.	Miles.
Maine.....	486.2	Alabama.....	581.8
New Hampshire.....	653.0	Mississippi.....	604.1
Vermont.....	557.6	Louisiana.....	281.0
Massachusetts.....	1327.8	Texas.....	205.5
Rhode Island.....	101.1		
Connecticut.....	601.8	<b>Gulf States.....</b>	<b>1672.4</b>
		Arkansas.....	38.5
<b>N. England States.....</b>	<b>3727.5</b>	Missouri.....	547.2
New York.....	2726.2	Tennessee.....	875.8
New Jersey.....	553.6	Kentucky.....	498.3
Pennsylvania.....	2678.1		
Delaware.....	114.7	<b>S. Interior States.....</b>	<b>1959.8</b>
Maryland.....	453.8	Ohio.....	2978.6
		Michigan.....	777.0
<b>Mid. Atl'c. States.....</b>	<b>6527.4</b>	Indiana.....	1939.4
Dist. of Columbia.....	2.5	Illinois.....	2774.4
Virginia.....	1642.7	Wisconsin.....	837.2
North Carolina.....	693.1	Iowa.....	343.8
South Carolina.....	872.8	Minnesota.....	..
Georgia.....	1178.8		
Florida.....	198.3	<b>N. Interior States.....</b>	<b>9750.4</b>
		California.....	22.5
<b>S. Atlantic States.....</b>	<b>4588.2</b>		
<b>Total, United States.....</b>	<b>28238.2</b>		

RAILROADS AT QUINQUENNIAL PERIODS.									
States.	1829.	'34.	'39.	'44.	'49.	'54.	'59.		
Maine . . . . .	..	..	12	64	87	407	486		
N. Hamp'e . . . . .	..	..	..	3	134	649	653		
Vermont . . . . .	..	..	..	..	93	516	578		
Mass'ts . . . . .	3	3	144	465	948	1,306	1,328		
R. Island . . . . .	..	..	50	50	50	50	101		
Connect't . . . . .	..	..	36	238	326	591	602		
N. England . . . . .	3	3	242	820	1,638	3,519	3,728		
New York . . . . .	39	325	722	953	2,393	2,726	2,726		
N. Jersey . . . . .	77	124	186	195	411	554	554		
Pennsylv'a . . . . .	25	318	562	893	981	1,627	2,678		
Delaware . . . . .	16	16	16	16	49	114	114		
Maryland . . . . .	88	181	254	324	412	454	454		
Dis. of Columbia . . . . .	..	..	..	3	3	3	3		
Md'e States . . . . .	25	538	1,208	2,074	2,472	4,895	6,530		
Virginia . . . . .	93	125	223	303	1,122	1,643	1,643		
N. Carolina . . . . .	..	..	..	87	154	403	693		
S. Carolina . . . . .	137	137	204	204	754	873	873		
Georgia . . . . .	..	..	100	452	609	971	1,179		
Florida . . . . .	..	..	..	..	24	26	198		
S. Atl. States . . . . .	230	362	966	1,324	3,276	4,585	4,585		
Alabama . . . . .	46	46	46	113	302	582	582		
Mississippi . . . . .	..	..	..	26	60	159	604		
Louisiana . . . . .	40	40	40	66	172	281	281		
Texas . . . . .	..	..	..	..	32	205	205		
Gulf States . . . . .	86	86	112	239	665	1,672	1,672		
Arkansas . . . . .	..	..	..	..	..	38	38		
Missouri . . . . .	..	..	..	..	37	547	547		
Tennessee . . . . .	..	..	..	..	317	876	876		
Kentucky . . . . .	15	25	28	28	122	498	498		
S.W. States . . . . .	15	25	28	28	476	1,959	1,959		
Ohio . . . . .	..	..	84	274	2,394	2,978	2,978		
Indiana . . . . .	..	..	..	86	1,482	1,939	1,939		
Illinois . . . . .	..	..	22	22	1,692	2,774	2,774		
Michigan . . . . .	..	..	206	270	527	777	777		
Wisconsin . . . . .	..	..	..	..	195	837	837		
Iowa . . . . .	..	..	..	..	37	344	344		
N.W. States . . . . .	..	..	312	652	6,307	9,750	9,750		
California . . . . .	..	..	..	..	..	22	22		
U. States . . . . .	28	872	1,923	4,312	6,353	19,138	28,238		

ANNUAL MILEAGE OF RAILROADS.			
Years.	Miles.	Years.	Miles.
1828 . . . . .	3	1844 . . . . .	4,312
1829 . . . . .	28	1845 . . . . .	4,670
1830 . . . . .	41	1846 . . . . .	4,836
1831 . . . . .	54	1847 . . . . .	5,282
1832 . . . . .	131	1848 . . . . .	5,679
1833 . . . . .	576	1849 . . . . .	6,353
1834 . . . . .	872	1850 . . . . .	7,312
1835 . . . . .	988	1851 . . . . .	9,090
1836 . . . . .	1,102	1852 . . . . .	11,631
1837 . . . . .	1,412	1853 . . . . .	13,379
1838 . . . . .	1,843	1854 . . . . .	19,138
1839 . . . . .	1,923	1855 . . . . .	21,069
1840 . . . . .	2,167	1856 . . . . .	23,761
1841 . . . . .	3,319	1857 . . . . .	25,966
1842 . . . . .	3,877	1858 . . . . .	28,238
1843 . . . . .	4,174		

## ANNUAL INCREASE OF MILEAGE.

1829 . . . . .	25	1844 . . . . .	138
1830 . . . . .	13	1845 . . . . .	358
1831 . . . . .	13	1846 . . . . .	160
1832 . . . . .	77	1847 . . . . .	446
1833 . . . . .	445	1848 . . . . .	397
1834 . . . . .	296	1849 . . . . .	674
1835 . . . . .	116	1850 . . . . .	959
1836 . . . . .	114	1851 . . . . .	1,778
1837 . . . . .	310	1852 . . . . .	2,541
1838 . . . . .	431	1853 . . . . .	1,748
1839 . . . . .	80	1854 . . . . .	5,759
1840 . . . . .	244	1855 . . . . .	1,931
1841 . . . . .	1,142	1856 . . . . .	2,692
1842 . . . . .	558	1857 . . . . .	2,205
1843 . . . . .	297	1858 . . . . .	2,272

Total . . . . . 28,238

## METEOROLOGICAL REPORTS.

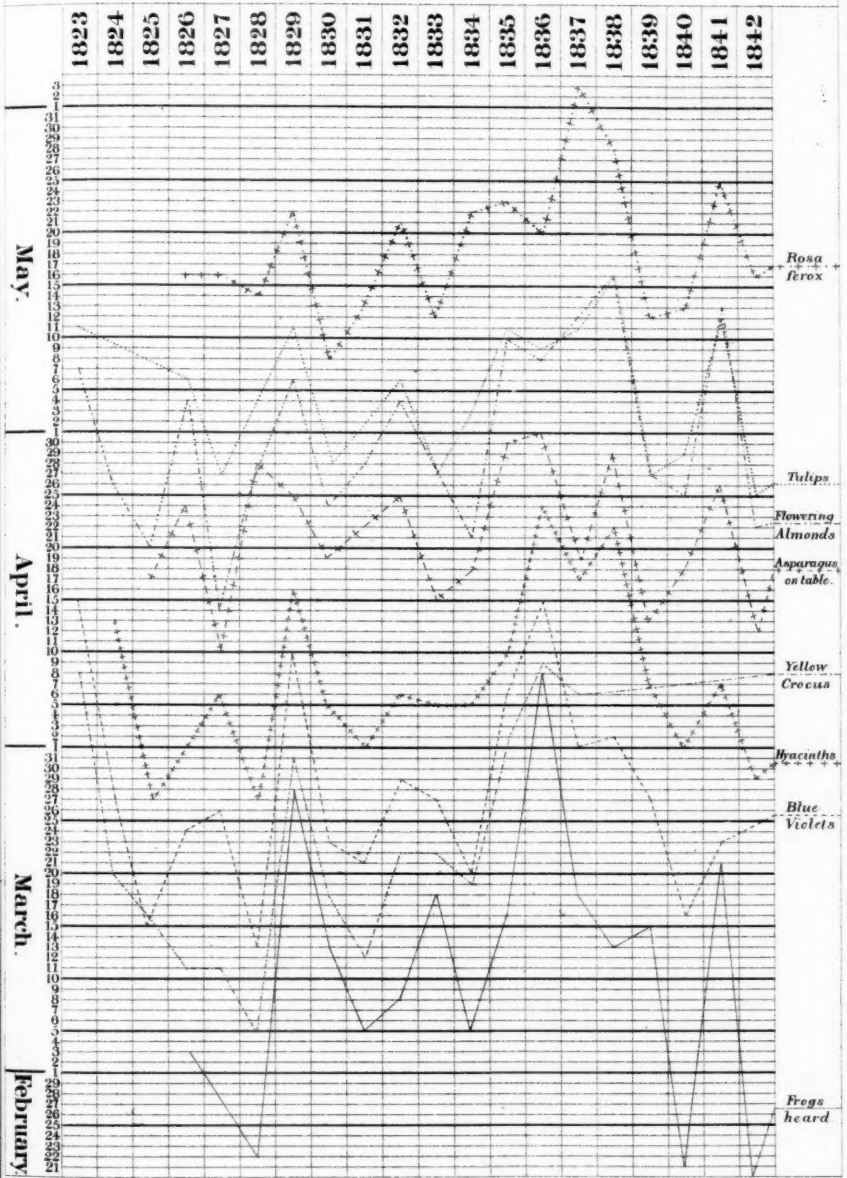
The following extracts are from the private journal of a lady of remarkably accurate habits and especially careful in her observations. They give the dates of the various indications of Spring, in consecutive series, for twenty years from 1823 to 1842. The observations were made in every instance upon the same plants growing in the same position, and under the same circumstances. They present an interesting illustration of the manner in which almost every one may, some way or another, advance the cause of science; and how, without scientific arrangement, a valuable amount of information can be extracted from the data obtained. The place of observation was upon the banks of the Passaic, New-Jersey, on tide water—lat. 40° 48'; long. 74° 8'.

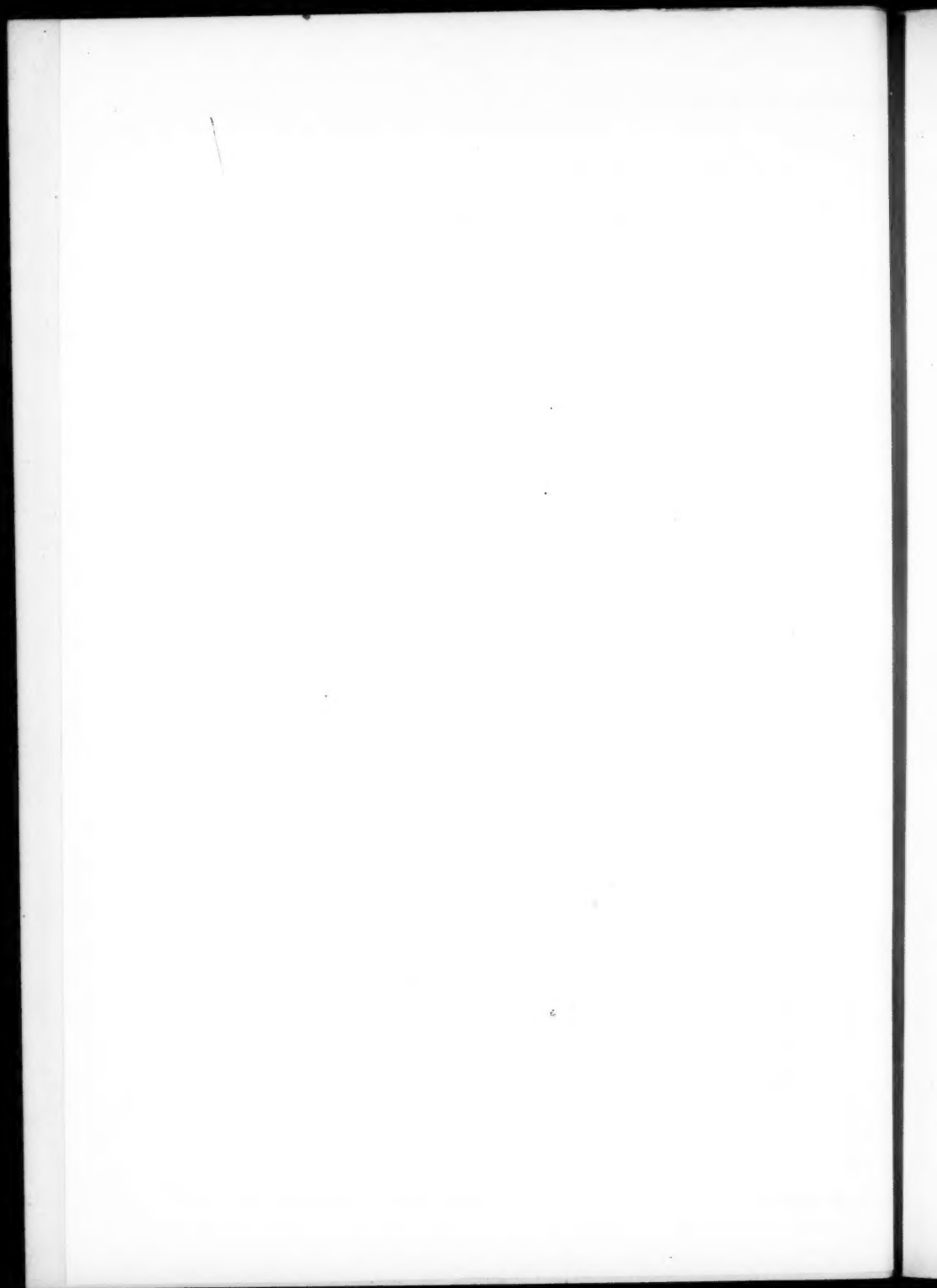
We have condensed the observations into into tabular form to show the way in which such observations can be best rendered of interest, and the deductions made most apparent. By reference to the table, it will be readily seen how much greater the variation from season to season is in the advent of the early harbingers of Spring, than in those that come later, there being a difference of forty-eight days in the appearance of frogs, while there is only sixteen days difference in the blooming of tulips.

Notes of similar observations, showing the dates of first, and killing frosts, in the fall, would be of great interest.









## DEPARTMENT OF PUBLICATIONS.

(Books for Notice must be sent early in the Month.)

## BOOKS, ATLASES, AND MAPS RECEIVED.

*Colton's Illustrated Cabinet Atlas and Descriptive Geography.*—Maps and plans (113)—by George Woolworth Colton; and text, (pp. 400)—by Richard Swainson Fisher. New York: J. H. Colton, No. 172 William street. 1 vol., royal 4to. With 652 illustrations. (Presented by the Publisher.)

*Report on the Currency.*—By a Committee of the Friends of Sound Currency (Hon. Geo. Opdyke, Chairman), and presented at their meeting in the Mercantile Library, on the 19th November, 1858. 8vo, pp. 32. (Presented by J. Smith Homans, Esq., Editor of the Bankers' Magazine.)

*Collisions at Sea*; the report of a Committee of the New York Chamber of Commerce in relation to, May 13, 1858. 8vo, pp. 49. (Presented by J. Smith Homans, Esq.)

*Statistics of Ohio.*—Annual Report of the Commissioner of Statistics to the General Assembly of Ohio, for the year 1857. By Edward D. Mansfield, Commissioner of Statistics. Columbus. 1858. 8vo, pp. 112. (Presented by the author.)

*Bankers' Magazine.*—Edited by J. Smith Homans, Corresponding Secretary of the Chamber of Commerce of the State of New York. Twelfth volume (containing monthly numbers). 1857-58. New York, No. 162 Pearl street. 8vo, pp. 1,000. (Presented by the editor.)

*Baltimore and Ohio Railroad.*—Thirty-second Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Railroad for the year 1858. Baltimore, 1858. 8vo, pp. 160. (Presented by J. Smith Homans, Esq., Editor of Bankers' Magazine.)

*Chamber of Commerce.*—Report of a Committee of the Chamber of Commerce of New York on Canal Navigation by Steam. New York, 1858, 8vo, pp. 84. (Presented by J. Smith Homans, Esq., Editor of the Bankers' Magazine.)

*Mexico.*—Decouverte des Ruines d'une ancienne ville Mexicaine, situee sur le Plateau de l'Anahuac. Par M. H. de Saussure. Paris, 1858. 8vo, pp. 24. (Presented by M. de la Roquette, Paris.) Also, Description d'un volcan eteint du Mexique, reste inconnu jusqu'à ce jour. Par M. H. de Saussure. Paris, 1857; 8vo. (Presented by M. de la Roquette, Paris.)

*Lighterage.*—Report of the Chamber of Commerce on the Charges at Quarantine for Lighterage, &c. New-York, 1858. 8vo, pp. 16. (Presented by J. Smith Homans, Esq.)

*Statistical Society.*—List of the Fellows of the Statistical Society of London. (Session, 1858-59. London, 1858. 8vo, pp. 24. (Presented by the Society.) Also, Journal of the Statistical Society of London. June and September, 1858. London: John William Parker & Son. (Presented by the Society.)

*Livingston.*—The Farewell Livingston Festival, 13 February, 1858. 8vo, pp. 28. (Presented by M. de la Roquette, Paris.)

*Exposicion Universal de Paris.*—Acto Solemne de la Distribucion de los Premios obtenidos por la Isla de Cuba, en la Exposicion Universal de Paris. Habana, 1857. 8vo, pp. 12.

*Acto Solemne de la Distribucion de Premios a los alumnos de la Escuela General Preparatoria y especiales de esta ciudad.* Habana, 1857. 8vo, pp. 24. (Presented by the Sociedad Economica de la Habana.)

*Reglamento de la Caja de Proestamos, Depositos, Anticipaciones y descuentos.*—Habana, 1857. 8vo, pp. 14. (Presented by the Sociedad Economica de la Habana.)

*Cuba.*—Geografia fisica y politica de la Isla de Cuba, por Felipe Poey. Habana, 1858. 8vo, pp. 48. (Presented by the Author.)

*Mexico.*—Voyage au Mexique decouverte d'un ancien volcan: lettre de M. H. de Saussure a M. de la Roquette, V. P. de la Soc. de Geog. de Paris. 1857: 8vo, pp. 16. (Presented by M. de la Roquette.)

*Agriculture Francaise.*—Annales de Sciences Physiques et Naturelles d'Agriculture et d'Industrie, publiees par La Societe Imperiale d'Agriculture, etc., de Lyon. Deuxieme Serie: tome VIII, (1856,) and Troisième Serie: tome I, (1857.) Lyon and Paris. 8vo, pp. 716-560, with numerous illustrations. (Presented by the Society.)

*Malte Brun.*—Nouvelles Annales des Voyages, de la Geographie, de l'Histoire, et de l'Archeologie. Redigees par M. V. A. Malte Brun. Sixieme Serie—quatrième annee, (January—August,) 1858. Paris: Arthur Bertrand. (Presented by M. de la Roquette, V. Pres. of Soc. de Geogr. de Paris.)

*Esquisse Geographique du Bassin de la mer d'Aral,* et quelques traits des mœurs des habitants de Boukhara, Khiva et Kokan. Par M. Eugene Lemansky, Sec. de la Soc. Imp. Geographique de Russie. Paris, 1858. 8vo, pp. 40. (Presented by M. de la Roquette.)

- Essai sur l'état physique, moral et intellectuel des aveugles-nés, avec un nouveau plan pour l'amélioration de leur condition sociale.* Par P. A. Dufau. Paris, 1837. 8vo, pp. 222. (Presented by M. de la Roquette.)
- Defrance.*—Notice Biographique sur M. Defrance. Par M. A. Damour. Paris. 8vo, pp. 12. (Presented by M. de la Roquette.)
- La Russie du XVII. Siecle, dans ses Rapports avec l'Europe Occidentale; recit du voyage de Pierre Potemkin, envoy en ambassade par le tsar Alexis Mikhailovitch a Philippe IV. d'Espagne, et a Louis XIV en 1688, precede d'un aperçu de l'état social et politique des trois pays a cette époque.* Par le Prince Emmanuel Galitzin. Paris: Gide et J. Baudry, Editeurs; 1855. 8vo, pp. 448. (Presented by M. de la Roquette.)
- Habana.*—Reglamento que debe observarse en la Biblioteca de la Real Sociedad Economica de la Habana. Habana, 1858. 8vo, pp. 40. (Presented by the Society.)
- Les Sources du Nil.*—Par Amedee Poussel. Paris, 1858. 8vo, pp. 8. (Presented by M. de la Roquette.)
- Discours de M. Garcin de Tassy: a l'ouverture de son cours d'Hindoustani, a l'école imperiale et speciale des langues orientales vivantes pres la Bibliotheque Imperiale.* Paris, 1857. 8vo, pp. 16. (Presented by M. de la Roquette.)
- Indo-Europeennes.*—Considerations Generales sur la philologie comparee des Langues Indo-Europeennes. Par M. Jules Oppert. Paris, 1858. 8vo, pp. 20. (Presented by M. de la Roquette.)
- Imperiale Geographische Societe de la Russie.*—Compte-Rendu de la Societe Geographique Imperiale de la Russie, pour l'annee 1856. St. Petersburg, 1857. 8vo, pp. 48. (Presented by M. de la Roquette.)
- Repertorium ueber die vom Jahre 1800 bis zum Jahre 1850, in Akademischen Abhandlungen, Gesellschaftsschriften und wissenschaftlichen Journalen auf dem Gebiete der Geschichte und Ihrer Huelfswissenschaften erschienenen Aufsätze.* Von Dr. W. Koner, Custos an der K. Universitäts-Bibliothek zu Berlin. Vol. I, (1852, 1st part, (1853), and 3d part, (1856.) Vol. II. Berlin, 1852-56. (Presented by the Author.)
- Nachrichten von der Georg-Augusts-Universität und der Koenigl. Gesellschaft der Wissenschaften zu Goettingen.* 2 vols., 12mo. Goettingen, 1856 and 1857. (Presented by the Royal Society of Sciences of Goettingen.)
- Zeitschrift fuer Allgemeine Erdkunde.* Von Dr. K. Neumann. No. 53 to 61, Nov. 1857, to July 1858. Berlin. (Presented by Dr. W. Koner, Librarian Royal University, Berlin.)
- Bericht der Oberhessischen Gesellschaft fuer Natur- und Heilkunde.* June and Oct., 1858. Giessen. (Presented by the Society.)
- Goettingische Gelehrt Anzeigen: unter der Aufsicht der Koenigl. Gesellschaft der Wissenschaften.* 6 vols., 12mo. 1856 and 1857. Goettingen. (Presented by the Royal Society of Sciences of Goettingen.)

GEOGRAPHICAL AND STATISTICAL WORKS RE-  
CENTLY PUBLISHED.

*Annuaire de l'Economie, Politique et de la Statistique, pour 1859 (15th year).* Par M. M. Block et Guillaumin. Paris: Guillaumin & Co., Editeurs du "Journal des Economistes," etc., 12mo, pp. 680.

*American Almanac and Repository of Useful Knowledge for the year 1859.* Boston: Chas. C. Little and James Brown.

*British Almanac and Companion for the year 1859.* Published under the Direction of the Society for the Diffusion of Useful Knowledge. London, (Eng.) 1 vol., 12mo.

*Almanac de Gotha.*—Annuaire Diplomatique et Statistique, pour l'annee 1859 (86th year of publication.) Gotha: Justus Perthes. 1 vol., 32mo, pp. 886.

*Practical Miner's Guide: a treatise on mine engineering, comprising a set of trigonometrical tables, etc.* By J. Bridge. New York: G. M. Newton, at the office of the "Mining Magazine." 1 vol., 8vo, pp. 191.

*Travels and Discoveries in North and Central Africa: being a journal of an expedition undertaken under the auspices of H. B. M.'s Government in the years 1849-1855.* By Henry Barth, Ph. D., D. C. L., etc. With maps and illustrations. New York: Harper & Brothers. 3 vols., 8vo.

*The Land and the Book; or, Biblical Illustrations Drawn from the Manners and Customs, the Scenes and Scenery of the Holy Land.* By W. M. Thompson, D. D., twenty-five years a missionary of the A. B. C. F. M. in Syria and Palestine. With two elaborate maps of Palestine, an accurate plan of Jerusalem, and several hundred engravings, etc. New York: Harper & Brothers, 2 vols., 12mo.

*Curiosities of Natural History.* By Frank T. Buckland, M.A. (From the 3d London Edition.) New York: Rudd & Carleton.